UNIT-e

Handbook - Technical
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All Markets

Managing UNIT-e Online Services - Web Site Installation



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4.60 enhancements

The following enhancements are provided in this release:

- With the introduction of the UNIT-e Admissions Management Service, the *UNIT-e Extended Applications* handbook (UXAP.pdf) has been retired and replaced by a new Admissions in UNIT-e Core handbook. Cross-references in this handbook have been updated to reflect this change.



Enhancements introduced in previous releases are listed in *Appendix A: Previous enhancements* (see page 66).

Contents



If you are unable to find the information you require, the search facility in Adobe Acrobat enables you to search individual PDFs or the entire UNIT-e documentation catalogue. Refer to the *About UNIT-e documentation* section in the *Working with UNIT-e* handbook (WWU.pdf) for further details.

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Chapter 1:

About your UNIT-e Online Services website

This handbook takes you through the process of installing your UNIT-e Online Services website. This covers the following UNIT-e applications:

- **UNIT-e Online Services:** This provides you with a website that your students and potential students can use to investigate the courses on offer at your institution. Using this software they can search for course details, make enquiries, apply for places on courses and enrol. They also have the option of paying their course fees online by credit card.



Further information is available from the *Managing UNIT-e Online Services* handbook (MOSC.pdf) and the *Managing UNIT-e Card Payments & Refunds* handbook (MCP.pdf).

- **UNIT-e Online Services for Organisations:** This website enables organisations (funding bodies, sponsors and/or employers), agents and parents access to details about the courses on offer at your institution. They can browse course details on behalf of their staff, trainees or family members and can enter details for and manage the training needs of named individuals. It's also possible to manage the training needs of a group of as yet unnamed individuals, entering their details at a later date.



Further information is available from the *Managing UNIT-e Online Services for Organisations* handbook (MOSORG.pdf).

- **UNIT-e Vocational Qualification Management & Tracking:** This enables you to manage Employer Services, Learner Services and Assessor Services. Additional

information about the use of this suite of applications is available from the *UNIT-e Vocational Qualification Management and Tracking* handbook (UVQMT.pdf).

The following areas are covered in this handbook:

- *Chapter 2: Considerations and prerequisites for website installation* (see page 9)
- *Chapter 3: Installing websites on internal web servers* (see page 31)
- *Chapter 4: Setting up the Online Strangers Transfer Service* (see page 55)

Chapter 2:

Considerations and prerequisites for website installation

The following should be considered or must be in place before you can install your website:

- *Using a Secure Sockets Layer (SSL) certificate* (see page 10)
- *An overview of Microsoft Windows Communication Foundation (WCF)* (see page 12)
- *Split server setup* (see page 15)
- *Microsoft software required on External Web Servers* (see page 16)
- *UNIT-e software required on Web Servers* (see page 19)
- *Required directory structures* (see page 20)
- *Installing system reference sequences* (see page 21)
- *Licence requirements* (see page 22)

Using a Secure Sockets Layer (SSL) certificate

To ensure adequate security for your website we strongly recommend that you obtain an SSL certificate from a Certificate Authority (CA) to protect your external web server from malicious attacks ("packet sniffing"). Secure Sockets Layer (SSL) technology secures your website by encrypting information and providing authentication.

This section covers the following:

- *How SSL provides public and private keys to privacy* (see page 10)
- *The benefits of an SSL certificate* (see page 10)

How SSL provides public and private keys to privacy

An SSL certificate consists of a public key and a private key. The public key is used to encrypt information and the private key is used to decipher it. When a browser points to a secured domain, an SSL handshake authenticates the server and the client, establishing an encryption method and a unique session key. A secure session guarantees message privacy and message integrity.

The benefits of an SSL certificate

Don't reveal yourself on the Internet.

Without SSL encryption, packets of information travel through networks in full view. It’s like sending a letter through the post in a transparent envelope - anyone with access to it can see the data, and if it looks valuable they might take it or change it.

Without third-party verification you can’t be sure that a website is an authentic representative of a business you trust. Every SSL certificate is created for a particular server in a specific domain for a verified business entity. Like a passport or a driving licence, an SSL certificate is issued by a trusted authority.

When the SSL handshake occurs, the browser requires authentication from the server. If the information doesn't match or if the certificate has expired, the browser displays an error message.



Ask your Applications Consultant for further advice on SSL certificates.

An overview of Microsoft Windows Communication Foundation (WCF)



This section gives a summary of information available on the Microsoft website at the following location. This is provided with permission from Microsoft.

HTTPS://msdn.microsoft.com/en-us/library/ms731190(v=vs.100).aspx

Windows Communication Foundation (WCF) is a framework for building service-oriented applications. Using WCF, you can send data as asynchronous messages from one service endpoint to another. A service endpoint can be part of a continuously available service hosted by IIS, or it can be a service hosted in an application. An endpoint can be a client of a service that requests data from a service endpoint. The messages can be as simple as a single character or word sent as XML, or as complex as a stream of binary data.

WCF is a SOAP message-based distributed programming platform, and securing messages between clients and services is essential to protecting data. WCF provides a versatile and interoperable platform for exchanging secure messages based upon both the existing security infrastructure and the recognized security standards for SOAP messages.

This section covers the following:

- *Transfer security* (see below)
- *Transport and Message security modes* (see page 13)
- *Standards and interoperability* (see page 13)

Transfer security

Transfer security encompasses three major security functions; integrity, confidentiality, and authentication.

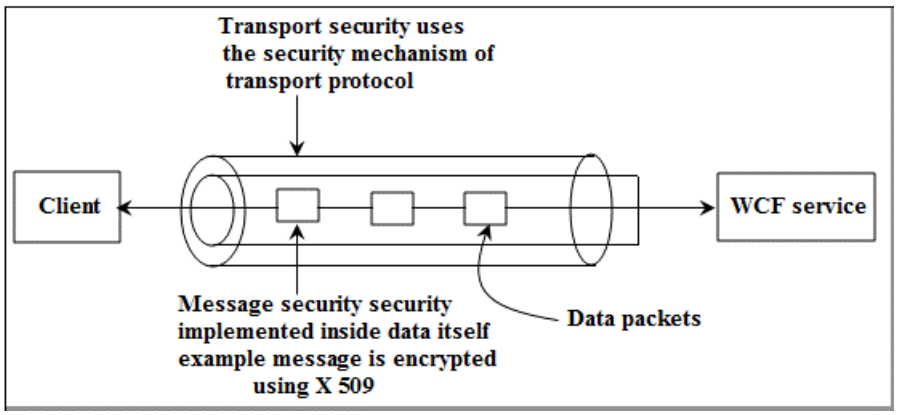
- **Integrity** is the ability to detect whether a message has been tampered with.
- **Confidentiality** is the ability to keep a message unreadable by anyone other than the intended recipient; this is achieved through cryptography.
- **Authentication** is the ability to verify a claimed identity.

Together, these three functions help to ensure that messages securely arrive from one point to another.

Transport and Message security modes

As shown in Figure 1, two main mechanisms are used to implement transfer security in WCF; **transport** security mode and **message** security mode.

Figure 1: Transport and Message level security



Transport security mode uses a transport-level protocol, such as HTTPS, to achieve transfer security. Transport mode has the advantage of being widely adopted, available on many platforms, and less computationally complex. However, it has the disadvantage of securing messages only from point-to-point.

Message security mode uses WS-Security (and other specifications) to implement transfer security. Because the message security is applied directly to the SOAP messages and is contained inside the SOAP envelopes, together with the application data, it has the advantage of being transport protocol-independent, more extensible, and ensuring end-to-end security (versus point-to-point); it has the disadvantage of being several times slower than transport security mode because it has to deal with the XML nature of the SOAP messages.

Standards and interoperability

In a world with large existing deployments, homogeneity is rare. Distributed computing/ communications platforms need to interoperate with the technologies different vendors offer. Likewise, security must also be interoperable.

To enable interoperable security systems, companies active in the Web services industry have authored a variety of standards. Specifically regarding security, a few notable standards have been proposed: WS-Security: SOAP Message Security (accepted by the OASIS standards body and formerly known as WS-Security), WS-Trust, WS-SecureConversation, and WS-SecurityPolicy.

WCF supports a wide variety of interoperability scenarios. The BasicHttpBinding class is targeted at the Basic Security Profile (BSP) and the WSHttpBinding class is targeted at the

latest security standards, such as WS-Security 1.1 and WS-SecureConversation. By adhering to these standards, WCF security can interoperate and integrate with Web services that are hosted on operating systems and platforms other than Microsoft Windows.

UNIT-e WCF Online Services implements WSHttpBinding, and Transport security with clientCredentialType set to None is stored in message headers but is encrypted. Users can change the key specified in the Web.Config for that encryption.

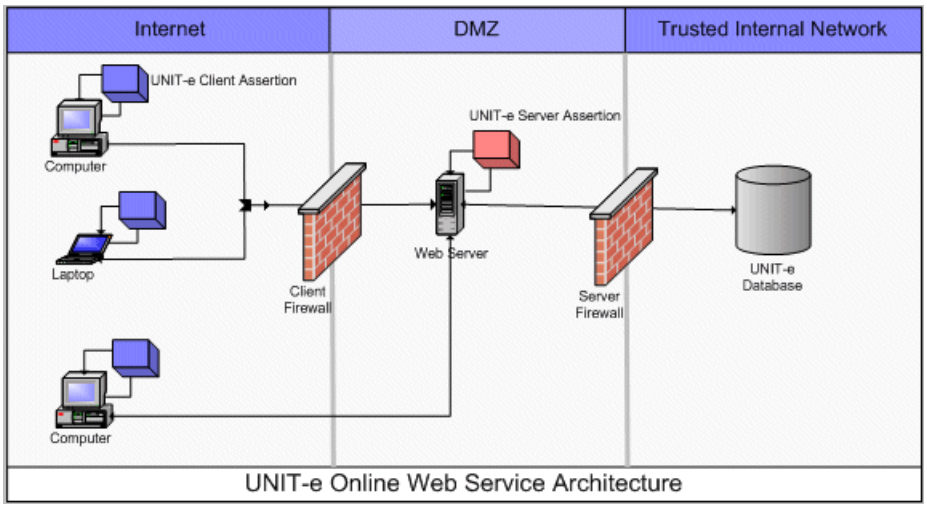


Further information about interoperability is available in the *UNIT-e FE/HE solutions interoperability* handbook (UFSI.pdf).

Split server setup

Whilst the standard Online Services transactions are secured by the model shown in *Transport and Message security modes* (see page 13), we strongly recommend that only the website itself should be public facing. To ensure this, the Web Services (which have direct access to the UNIT-e database) should be installed on an Internal Web Server on the internal network, protected by a secure Firewall (Figure 2).

Figure 2: UNIT-e Online Web Service architecture



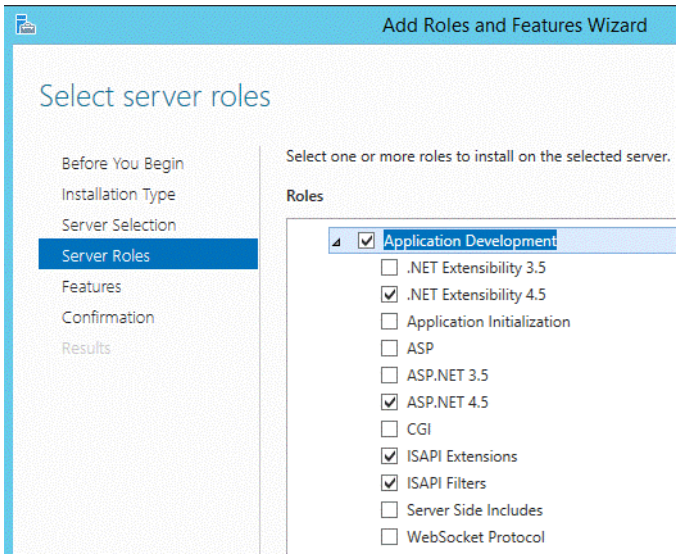
Microsoft software required on External Web Servers

These instructions cover the setting up of a UNIT-e version of the website/Web Server.

1. The following Microsoft software must be installed on the External Web Server (Figure 3):

   - .NET Extensibility 4.5
   - ASP .NET 4.5
   - WCF Services HTTP Activation
   - Microsoft .NET Framework 4.8

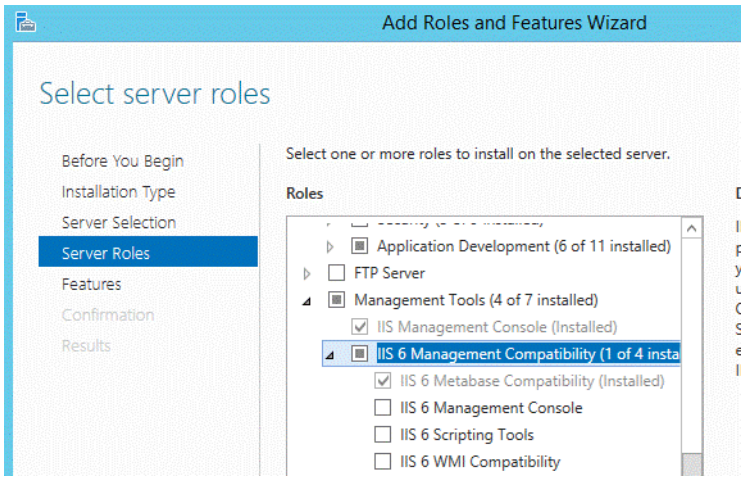
Figure 3: Microsoft software for External Web Server



2. For Internet Information Server (IIS Manager), make sure that the following are in place:

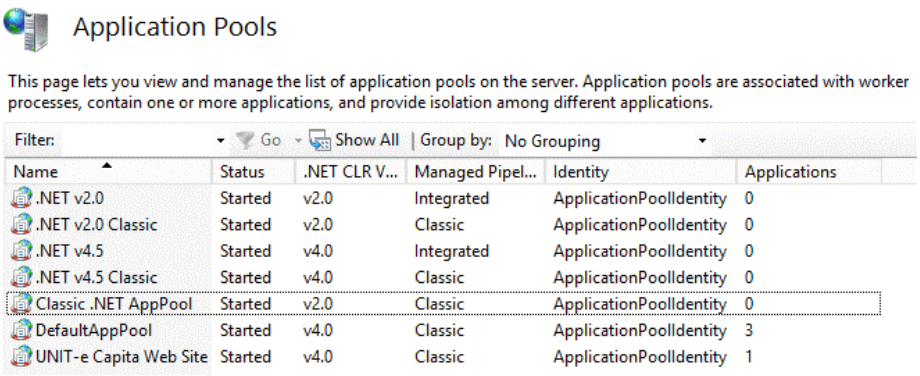
   i. IIS 6 Metabase Compatibility is set to 'Installed' in **Server Manager** (Figure 4).

Figure 4: IIS 7 - IIS 6 Metabase Compatibility



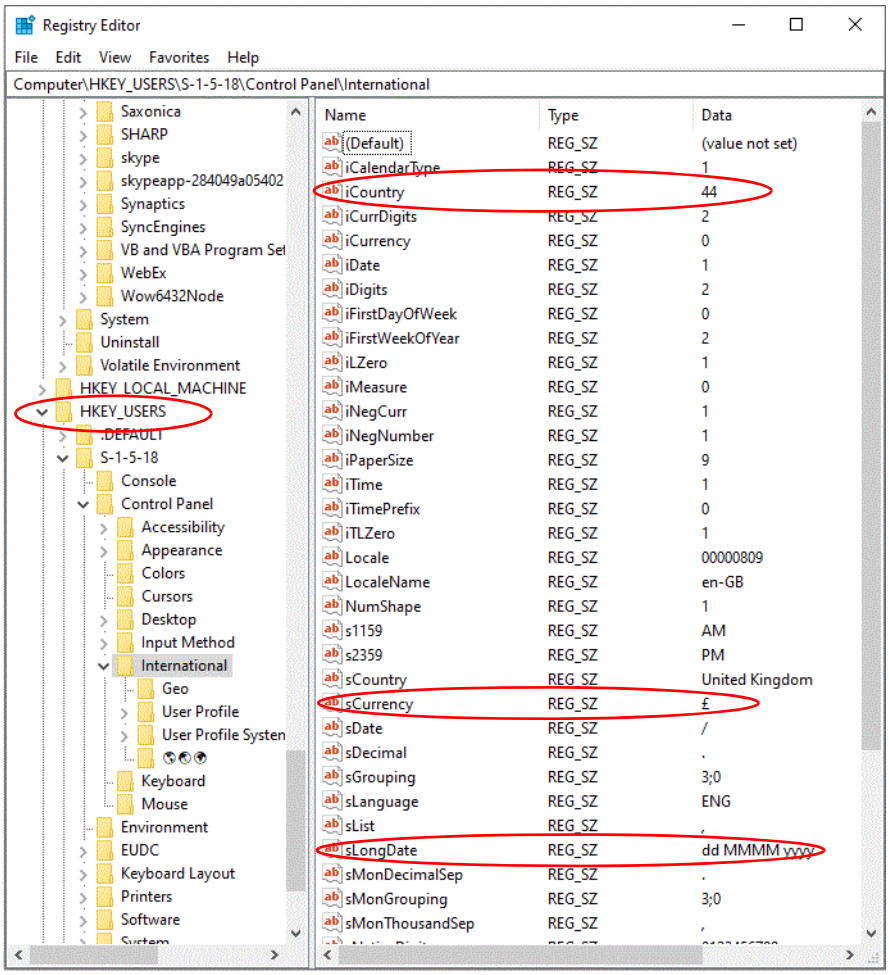
ii. DefaultAppPool has a **Managed Pipeline Mode** of 'Classic' (Figure 5).

Figure 5: IIS 7 DefaultAppPool



3. In order to avoid various system problems you must ensure that all system users have UK regional settings in **Registry Editor**, as all web services use UK settings. The example in Figure 6 shows the values for each user in HKEY_USERS (e.g. Country is '44', Currency is '£' and dates are in dd/MMMM/yyyy or dd/MM/yyyy format).

Figure 6: Regional settings in Registry Editor



UNIT-e software required on Web Servers

The following UNIT-e software must be installed on the Web Servers:

- UNIT-e Workstation Setup
- Oracle client for Oracle customers



Refer to the *Oracle Client ODAC 12 and 19* handbook (ODAC.pdf) for further information.

We recommend that you create an installation directory of the website at the root of C:\Inetpub on both the Internal Web Server and the External Web Server. In these installation instructions this directory is called "UNIT-e Install Web Site".

Once the upgrade of the UNIT-e components is complete, copy both website and Web Service components to the relevant Institution folders (where the development and live websites are run from). Any customisation to website components should be backed up and documented in the standard change log.

Required directory structures

1. Create the following directories on the Internal Web Server:

   - C:\Inetpub\UNIT-e Install Web Site
   - C:\Inetpub\UNIT-e Development Website
   - C:\Inetpub\UNIT-e Live Website

   Following the installation process, the UNIT-e Install Web Site/Web Service, the Development website/Web Service and the Live Web Service will be installed in these folders.

2. Create the following directory on the External Web Server:

   - C:\Inetpub\UNIT-e Live Website

   Following the installation process the Live website components will be installed in this folder.



The default market web page configuration folders (fes, fs, fw and he) should not be copied across to the Live website folder.

3. In IIS, create the websites corresponding to the above directory structure. Set the required hostnames in DNS for the UNIT-e, Development and Live websites and adjust the Bindings properties of each website accordingly.

Installing system reference sequences

In order to use UNIT-e Online Services you must install the following system reference sequences from the sequence.xml script in the latest release image. This is located in the **Scripts-Full\1. Database Changes** directory.

- onlineenquiry
- onlineapplication
- onlineenrolment

You should only install system reference sequences once. If they're already installed you won't see any details in the right-hand pane of the **System Transfer** form when you open the script (Figure 7).

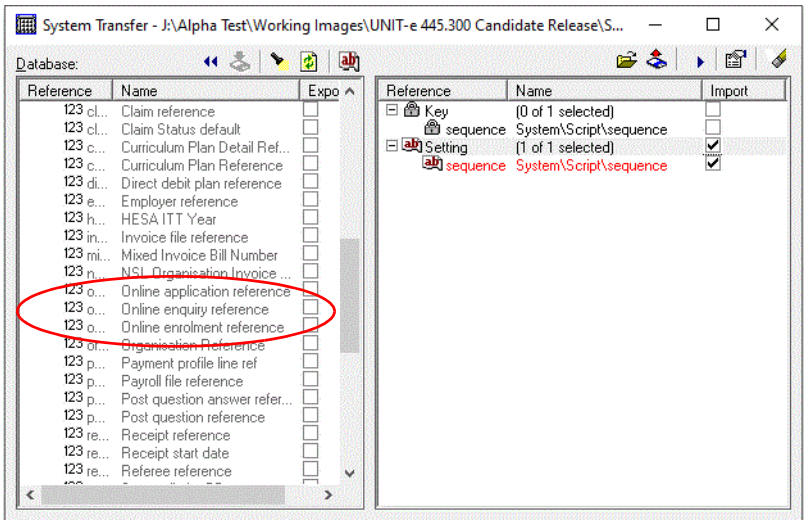


Figure 7: Sequence script in UNIT-e Database Manager

You don't have to have the system references set up for these classes/properties but the sequences must exist.

By default referees for applications have a unique index on reference, therefore you should set up a system reference sequence for this property if you implement **Referee Manager** in UNIT-e Online Services.

Licence requirements

Import the following licence via UNIT-e Licence Viewer:

- *Licences required by background processes* (see below)
- *UNIT-e Online Services* (see below)
- *UNIT-e Online Services for Organisations* (see page 23)
- *Optional Online Services functionality* (see page 23)

Licences required by background processes

You must have the following licences in order to operate background processes:

- OSMA (Online Services Manager Applications) - required to access manager applications.
- RWSI (Report Web Services Integration) - required by all web pages to run reports created in Report Generator.
- WSEM (Windows Service - Email) - required for all email processing.

UNIT-e Online Services

At least one of the following licences is required:

- OSEQ (Online Services Enquiries) - enables online enquiries
- OSAP (Online Services Applications) - enables online applications
- OSEN (Online Services Enrolments) - enables online enrolments.

You need a licence for each of the above processes. If you wish to make all three processes available to students you must have all three licences.



Additional optional licences are listed below (see page 23).

UNIT-e Online Services for Organisations

The following licence is required IN ADDITION to at least one of the licences listed for UNIT-e Online Services (see above):

- OSORG (Online Services (Organisations)



Additional optional licences are listed below (see page 23).

Optional Online Services functionality

The following licences provide optional Online Services functionality:

- AFDW - AfD Postcode Plus - This provides functionality that displays an address when a postcode is entered. Refer to the *Managing UNIT-e Online Services* handbook (MOSC.pdf).
- FMCI - Finance Manager Credit Card Instalments - refer to the *Managing UNIT-e Card Payments & Refunds* (MCP.pdf)
- FMOR - Online Services Refunds - refer to the *Managing UNIT-e Card Payments & Refunds* (MCP.pdf)
- FMSP - Online Subsequent Payments - refer to the *Managing UNIT-e Card Payments & Refunds* (MCP.pdf)
- OLSH - Online Shop - refer to the *UNIT-e Online Shop* handbook (UOLS.pdf)
- OSEA (Online Services Extended Applications) - required to run Extended Applications.
- RWSW - Report Web Services Writeback

- SFOS - Support Funds Online Services - refer to the *UNIT-e Support Funds* handbook (USF.pdf)



Contact the Support Team if you require further information regarding licensing problems or requirements.

General information about licences is available in the *Managing UNIT-e* handbook (MU.pdf).

Class permissions

The following class permissions are required by the Windows Services user:

- *The Windows Services user group* (see below)
- *Online Stranger Transfer/Pending Merged Students class permissions* (see page 29)

The Windows Services user group

By default the user running the UNIT-e Windows Services is assumed to be 'uniteservice', therefore you should consider creating this user, although you can specify a different user to run the UNIT-e Windows Services if you prefer. Whichever user you use, make sure that they're a member of the 'Windows Services user group' (winservices).

Table 1 shows the class permissions assigned to the 'Windows Services user group'.



- Permissions for the majority of the Exam classes listed below are no longer required but they are included here because they are still specified within the 'Windows Service user group'.
- No menu access is required for the Windows Services user.

Table 1: Windows Services user group class permissions

Class	Permissions
Activity	(All)
Address	(All)
Assessment	(All)
Diagnostic assessment	(All)
Enrolment	(All)
Exam assessment material	(All)
Exam board	(All)
Exam booking	(All)
Exam booking elements	(All)
Exam candidate	(All)
Exam centre	(All)
Exam event schedule	(All)
Exam event schedule event	(All)

Class	Permissions
Exam fee category	(All)
Exam feedback additional information	(All)
Exam feedback attributes	(All)
Exam feedback code	(All)
Exam feedback identifiers	(All)
Exam feedback message	(All)
Exam feedback message details	(All)
Exam grade performance points	(All)
Exam qualification age range	(All)
Exam qualification assessment material	(All)
Exam qualification availability	(All)
Exam qualification availability schedule	(All)
Exam qualification centre	(All)
Exam qualification element	(All)
Exam qualification fee	(All)
Exam qualification framework	(All)
Exam qualification framework tier	(All)
Exam qualification grade	(All)
Exam qualification grade boundary	(All)
Exam qualification learner identifier	(All)
Exam qualification maximum mark	(All)
Exam qualification objective statement	(All)
Exam qualification objective statement hierarchy	(All)
Exam qualification preference	(All)
Exam qualification relationship	(All)
Exam qualification sector subject area	(All)
Exam results	(All)
Exam results load	(All)
Exam sector subject area	(All)
Exam sequence number	(All)
Exam subject	(All)
Exam subject entry	(All)
Exam test system	(All)
Exam transport log	(All)

Class	Permissions
Exam fee category	(All)
Exam feedback additional information	(All)
Exam feedback attributes	(All)
Exam feedback code	(All)
Exam feedback identifiers	(All)
Exam feedback message	(All)
Exam feedback message details	(All)
Exam grade performance points	(All)
Exam qualification age range	(All)
Exam qualification assessment material	(All)
Exam qualification availability	(All)
Exam qualification availability schedule	(All)
Exam qualification centre	(All)
Exam qualification element	(All)
Exam qualification fee	(All)
Exam qualification framework	(All)
Exam qualification framework tier	(All)
Exam qualification grade	(All)
Exam qualification grade boundary	(All)
Exam qualification learner identifier	(All)
Exam qualification maximum mark	(All)
Exam qualification objective statement	(All)
Exam qualification objective statement hierarchy	(All)
Exam qualification preference	(All)
Exam qualification relationship	(All)
Exam qualification sector subject area	(All)
Exam results	(All)
Exam results load	(All)
Exam sector subject area	(All)
Exam sequence number	(All)
Exam subject	(All)
Exam subject entry	(All)
Exam test system	(All)
Exam transport log	(All)

Class	Permissions
Hotlink	Select, Insert, Update, Delete
Hotlink upload	Select, Insert, Update, Delete
Lookup valid values	(All)
Message log	(All)
Module	(All)
Module activity	(All)
Organisation role	(All)
Person	(All)
Person address	(All)
Person message	(All)
Person message data	(All)
Person message incoming	(All)
Person telephone	(All)
Personal details	(All)
Role	(All)
Room	(All)
Room activity	(All)
Room register	(All)
Setting	(All)
Setting key	(All)
Staff	(All)
Staff activity	(All)
Staff register	(All)
Student	(All)
Student register	(All)
Telephone	(All)
Unit	(All)

Online Stranger Transfer/Pending Merged Students class permissions

The user running the Online Stranger Transfer/Pending Merged Students processes must have the class permissions shown in Table 2. Not all of these classes are covered by the 'Online Services web config user' user group (see page 25), therefore they must be added manually to the user permissions.

Table 2: Class permissions for Online Stranger Transfer

Class	Access type
Candidate	Select, Update
Candidate archive	Select, Insert, Update
Merge link	Select, Insert
Online organisation mapping	Select, Update
Online stranger mapping	Select, Update
Organisation	Select, Update
Staff	Select, Update
Staff archive	Select, Insert, Update
Staff HESA	Select, Update
Staff HESA archive	Select, Insert, Update
Staff SIR	Select, Update
Staff SIR archive	Select, Insert, Update
Staff WSIR	Select, Update
Staff WSIR archive	Select, Insert, Update
Student	Select, Update
Student archive	Select, Insert, Update
Student FES/SQA	Select, Update
Student FES/SQA archive	Select, Insert, Update
Student HEA	Select, Update
Student HEA archive	Select, Insert, Update
Student HESA	Select, Update
Student HESA archive	Select, Insert, Update
Student ISR/ILR	Select, Update
Student ISR/ILR archive	Select, Insert, Update
Student WSR/LLWR	Select, Update
Student WSR/LLWR archive	Select, Insert, Update

Chapter 3:

Installing websites on internal web servers

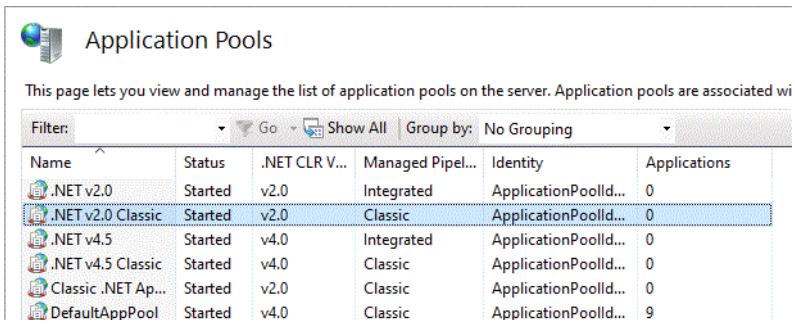
This chapter deals with the process of installing websites on your internal web server. The following areas are covered:

- *About Application Pools* (see page 32)
- *Installing the UNIT-e WCF Service* (see page 35)
- *Installing UNIT-e WCF Online Services* (see page 40)
- *UNIT-e Web.Config credentials encryption* (see page 45)
- *Upgrading your UNIT-e Development website* (see page 47)
- *Upgrading your UNIT-e Live website* (see page 48)
- *Updating your External Web Server* (see page 49)
- *Website authentication for UNIT-e WCF Online Services* (see page 50)
- *Website authentication for UNIT-e WCF Online Services* (see page 50)
- *Browsing the Web Services Description Language (WSDL) in WCF* (see page 51)
- *IIS timeout settings for Online Services* (see page 52)
- *Using multiple payment portals* (see page 53)

About Application Pools

Application pools are associated with worker processes. They contain one or more applications and provide a way of isolating different applications. Figure 8 shows an example of multiple application pools in Internet Information Services Manager (IIS).

Figure 8: Applications pools in IIS



When dealing with Application Pools you should consider the following:

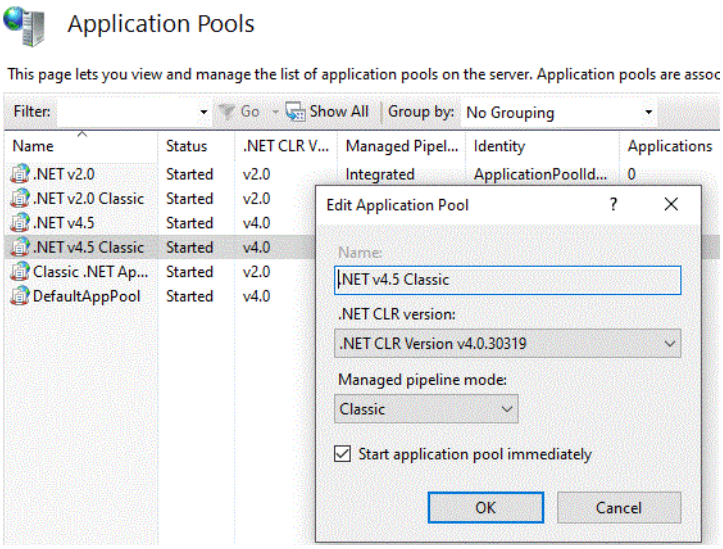
- *Selecting an Application Pool* (see below)
- *Defining the Application Pool Identity* (see page 33)

Selecting an Application Pool

When you specify an **Application Pool** as part of the WCF Service and WCF Online Services installation processes you may have multiple options to choose from.

What matters when you make your selection is not the **Name** of the application pool, which is just a label, but the associated **.NET CLR version** (previously the **.NET Framework version**), which should be in the .NET Framework v4 family, as shown in the **Edit Application Pool** form in Figure 9 (the exact version will vary between institutions).

Figure 9: Edit Application Pool

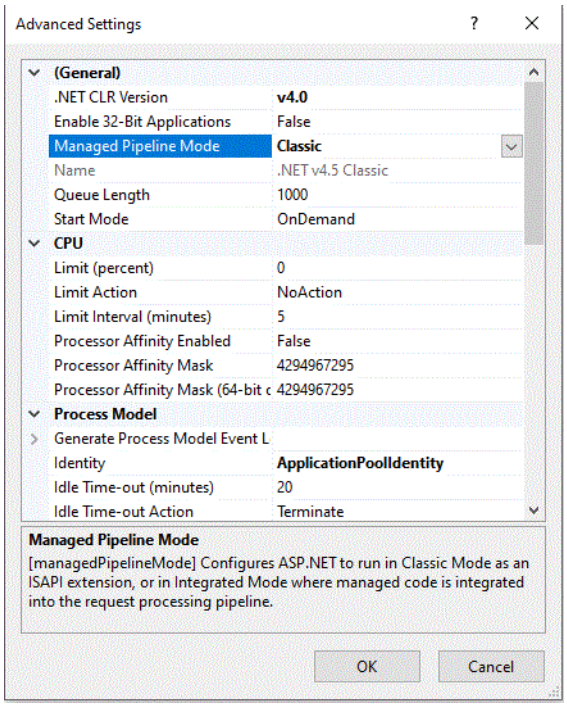


When you make your selection you can either pick 'ASP .NET v4.5 Classic', which is associated with the correct **.NET CLR version**, or you can modify the properties of the selected application pool to match those of 'ASP .NET v4.5 Classic'.

Refer to *Installing the UNIT-e WCF Service* (see page 35) and *Installing UNIT-e WCF Online Services* (see page 40) for further information about these processes.

Defining the Application Pool Identity

Figure 10: Application Pool Advanced Settings



In all cases the **Managed pipeline mode** must be 'Classic'.

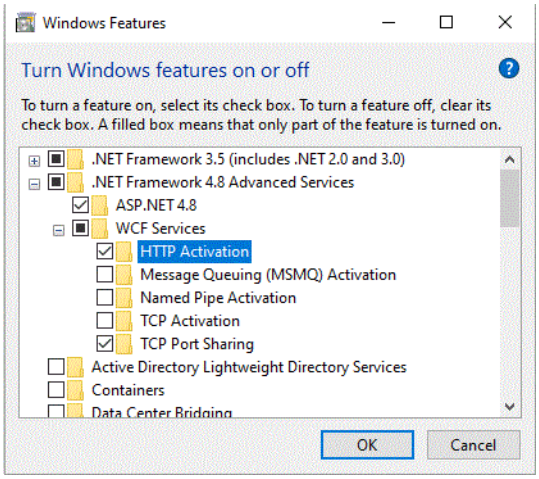
Although the properties you specify when defining the Application Pool shouldn't be altered by an upgrade, you should check them if you encounter problems after an upgrade.

Installing the UNIT-e WCF Service

To install the UNIT-e WCF Service

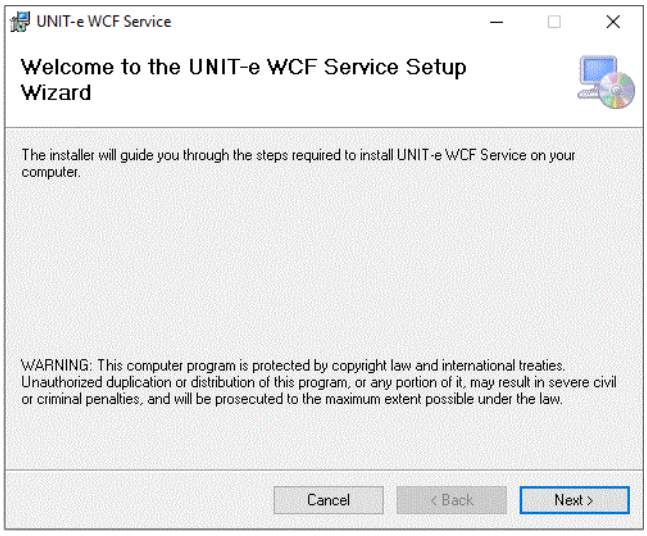
1. In the Windows **Control Panel**, check that **.NET Framework v4.8 Advanced Services** | **WCF Services | HTTP Activation** is installed on the web server (Figure 11).

Figure 11: HTTP Activation



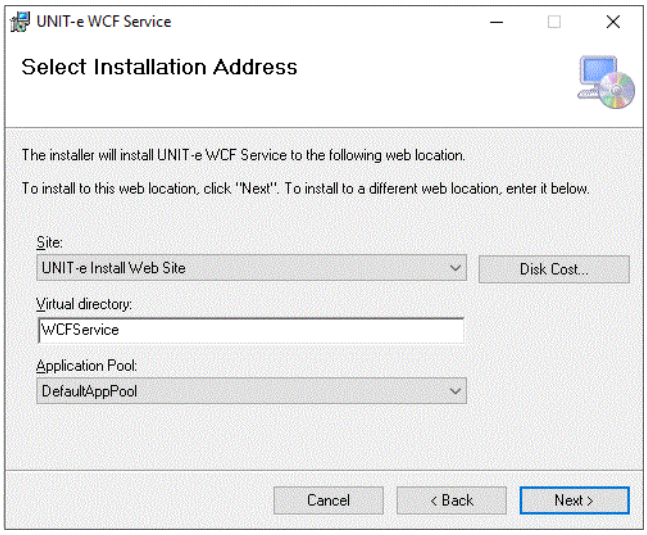
2. Install the WCF Service by running the setup.exe in **Software Setup\WCF Services Setup\WCF Service** in the latest platform release. This opens the UNIT-e WCF Service Setup Wizard (Figure 12).

Figure 12: WCF Service Setup Wizard - Welcome



3. Click **Next** to continue to the **Select Installation Address** form (Figure 13).

Figure 13: WCF Service Setup Wizard - Select Installation Address

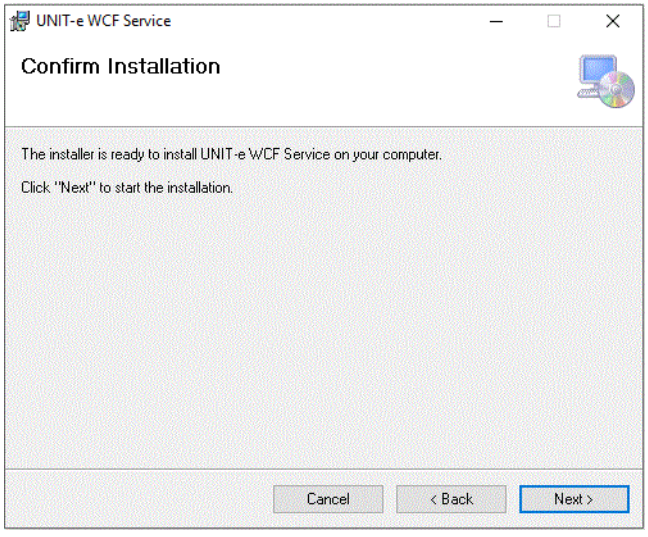


The **Site** must be the 'UNIT-e Install Web Site', the **Virtual directory** should be 'WCFService' and you MUST specify a '.NET v4.5 Classic' **Application Pool**.

Refer to *About Application Pools* (see page 32) for further information.

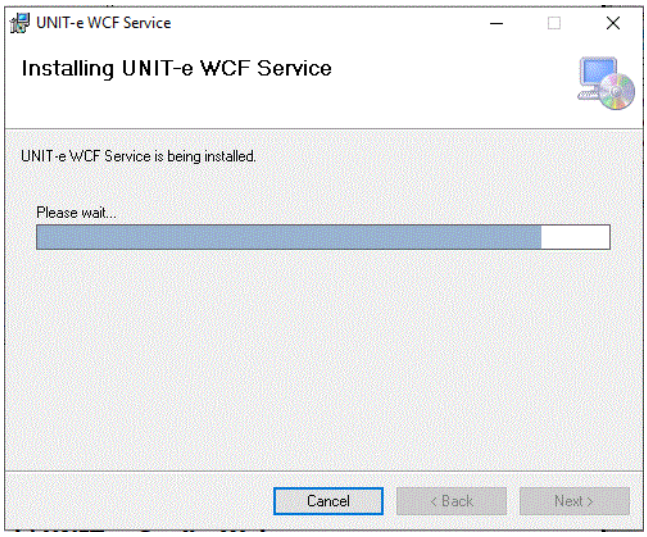
4. Click **Next** to continue to the **Confirm Installation** form (Figure 14).

Figure 14: WCF Service Setup Wizard - Confirm Installation



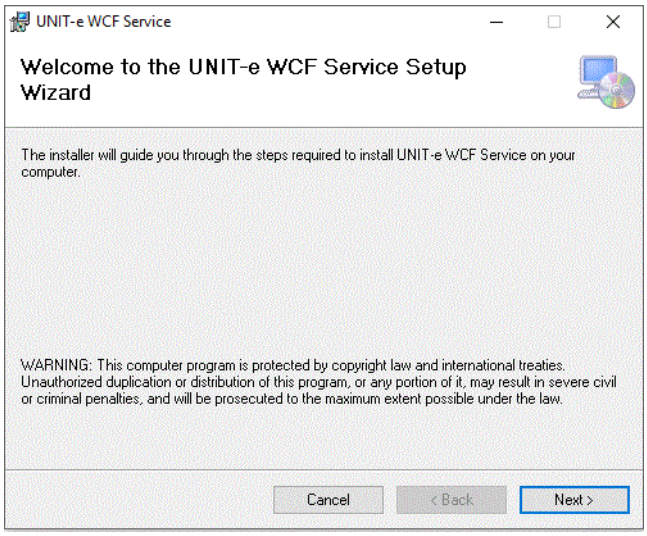
5. Click **Next** to start the installation (Figure 15).

Figure 15: WCF Service Setup Wizard - Installing



6. The screen shown in Figure 16 is displayed when the process is complete.

Figure 16: WCF Service Setup Wizard - Installation Complete



7. Copy your CAPITA.LIC file into the **C:\inetpub\UNIT-e Install Web Site\WCFService** folder.

8. In Administrative mode, locate the Web.Config file in **C:\inetpub\UNIT-e Web Service\WCFService** and adjust the endpoint addresses.

<services>

<!--

Change the Binding Configuration to:

"UniteGeneral" for HTTP,

"UniteHttps" for HTTPS,

"UniteLdap" for Windows Authentication with HTTPS

-->

<service name="UNITe.WCF.UNITeService">

```
<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="UNITeService" contract="UNITe.WCF.IUNITeService"/>

</service>

<service name="UNITe.WCF.IBService">

<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="IBService" contract="UNITe.WCF.IIBService"/>

</service>

<service name="UNITe.WCF.AttendanceService">

<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="AttendanceService" contract="UNITe.WCF.IAttendance"/>

</service>

<service name="UNITe.WCF.HRService">

<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="HRService" contract="UNITe.WCF.IHRService"/>

</service>

<service name="UNITe.WCF.WorkFlowService">

<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="WorkFlowService" contract="UNITe.WCF.IWorkFlowService"/>

</service>

<service name="UNITe.WCF.XMLService">

<endpoint address="" binding="netHttpBinding" bindingConfiguration="UniteHttps"
name="XMLService" contract="UNITe.WCF.IXMLService"/>

</service>
```

About the UNITeService.svc page

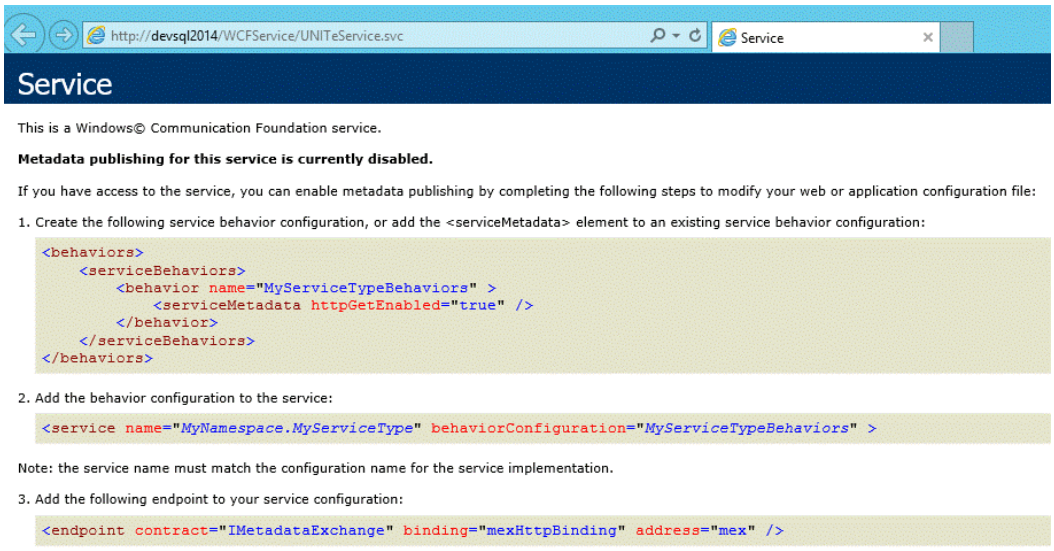
The end point WCF Service page 'UNITeService.svc' (Figure 17) is the equivalent of the WSE service.asmx page.

It's not recommended that you attempt to browse this page directly, unless you wish to review the list of methods, as it will take a very long time to display.



Refer to *Browsing the Web Services Description Language (WSDL) in WCF* (see page 51) for further information.

Figure 17: WCF Service



Installing UNIT-e WCF Online Services

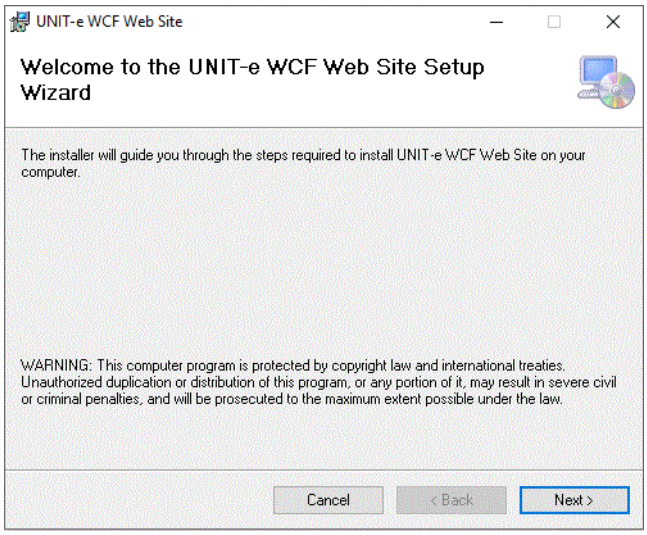
To install UNIT-e WCF Online Services

1. Make sure that you've installed the WCF Service.

Refer to *Installing the UNIT-e WCF Service* (see page 35) for details.

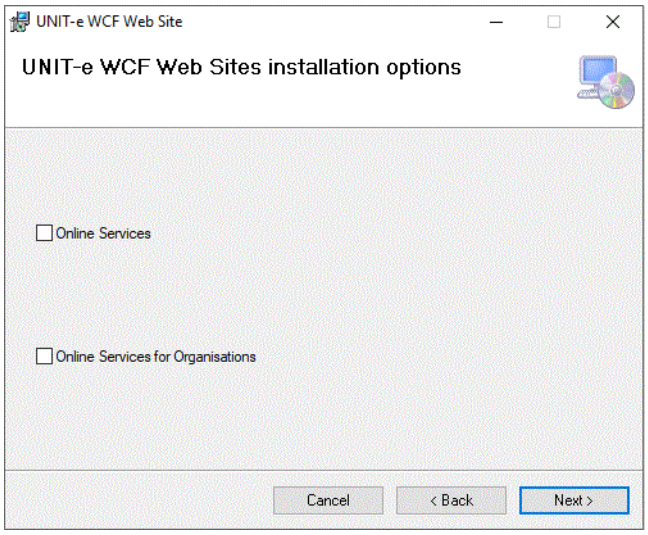
2. Install the new website by running the setup.exe in **Software Setup\WCF Services Setup\website** in the latest platform release. This opens the UNIT-e WCF website Setup Wizard (Figure 18).

Figure 18: WCF website Setup Wizard



3. Click **Next** to continue to the **Installation options** screen (Figure 19) and tick the required website(s).

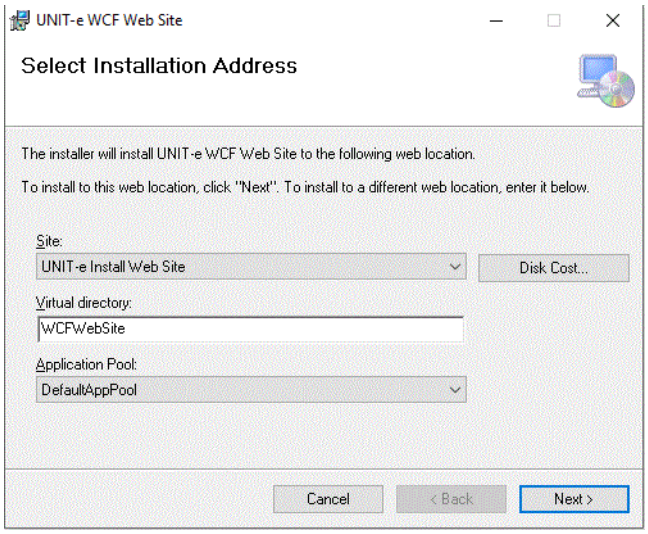
Figure 19: WCF website Setup Wizard - Installation options



4. Click **Next** to continue to the **Select Installation Address** screen (Figure 20). Select the 'UNIT-e Install Web Site' **Site** and specify a '.NET 4 Classic' or '.NET 4.5 Classic' **Application Pool**.

Refer to *About Application Pools* (see page 32) for further information.

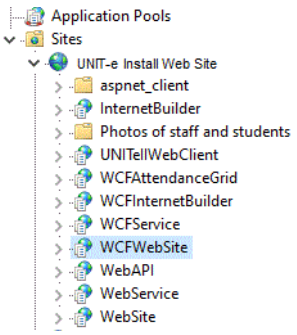
Figure 20: WCF website Setup Wizard - Select Installation Address



5. Click **Next** to start the installation. The software displays an **Installing** screen (see Figure 15 on page 37) followed by an **Installation Complete** screen (see Figure 16 on page 37). Click **Close** to complete the process.

6. In IIS, browse to the **WCFWebSite** (Figure 21).

Figure 21: WCFWebSite in IIS

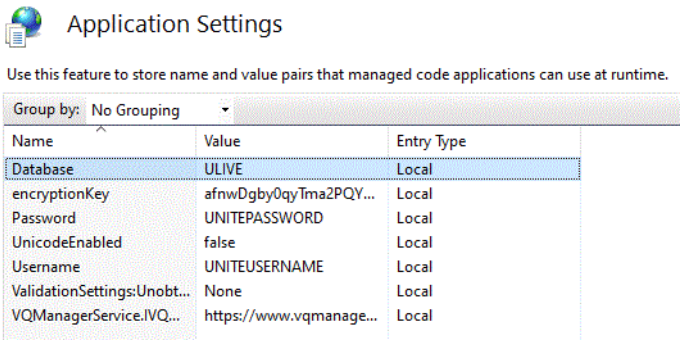




7. Open the **Application Settings** and update them with the login credentials for your UNIT-e database and update them as follows, as shown in Figure 22.

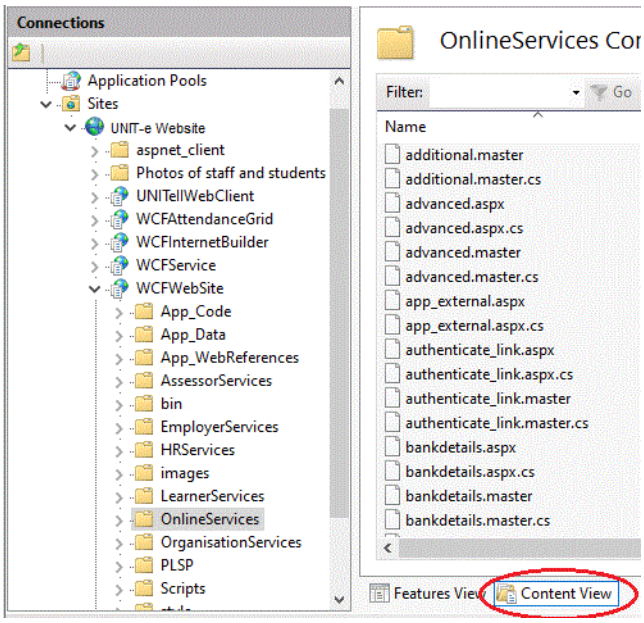
   - **Database:** ULIVE
   - **Password:** your secure password
   - **Username:** A UNIT-e Database Manager (Users) user reference (not 'uniteadmin' or 'ess' for security reasons). This user must be a member of user groups **os_online** and/or **osorg_online**, as required.

Figure 22: Application Settings in IIS



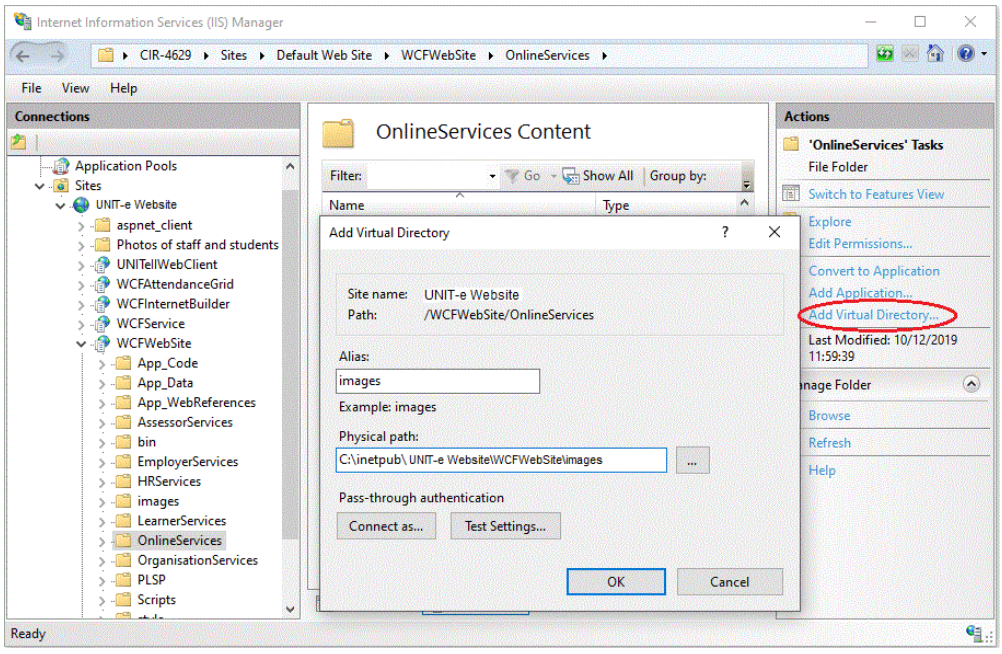
8. Expand the **WCFWebSite** folder, select **OnlineServices** and change to **Content View** (Figure 23).

Figure 23: Content view in IIS



9. To add images to your website, select **Add Virtual Directory** from the menu on the right of the screen to open the **Add Virtual Directory** form and create a virtual directory with an **Alias** of 'images'. When you enter the **Physical path**, point it to the existing 'images' directory at the root of the website (**C:\inetpub\UNIT-e Install Web Site\WCFWebSite\images**).

Figure 24: Add images



10. To add styles to your website, repeat Step 9., this time creating a virtual directory with an **Alias** of 'style' that points to the 'style' directory at the root of the website (**C:\inetpub\UNIT-e Install Web Site\WCFWebSite\style**).

11. In Administrative mode, locate the Web.config file in **C:\inetpub\UNIT-e Install Web Site\WCFWebSite**, go to the <client> section at the bottom of the file and adjust the hostnames of the endpoint addresses.

    Change the Binding Configuration to:

```
                    "UniteGeneral" for HTTP,

                    "UniteHttps" for HTTPS,

                    "UniteLdap" for Windows Authentication with HTTPS

    -->

    <endpoint address="https://localhost/WCFService/UNITeService.svc"
    binding="netHttpBinding" bindingConfiguration="UniteHttps"
    contract="UNITe.WCF.IUNITeService" name="UNITeService" />

    <endpoint address="https://localhost/WCFService/WorkFlowService.svc"
    binding="netHttpBinding" bindingConfiguration="UniteHttps"
    contract="UNITe.WCF.IWorkflowService" name="WorkflowService" />

    <endpoint address="https://localhost/WCFService/XMLService.svc"
    binding="netHttpBinding" bindingConfiguration="UniteHttps"
    contract="UNITe.WCF.IXMLService" name="XMLService" />

    <endpoint address="https://localhost/WCFService/HRService.svc"
    binding="netHttpBinding" bindingConfiguration="UniteHttps"
    contract="UNITe.WCF.IHRService" name="HRService" />

    </client>
```

12. Reinstate market-specific files by copying files under the relevant folder (fe, fs, fw or he) onto the folder above - **C:\Inetpub\UNIT-e Install Web Site\WCFWebSite\ OnlineServices**.

UNIT-e Web.Config credentials encryption

In the past the UNIT-e credentials for Online Services and Organisation Services (including UNIT-e password) were stored in the Web.Config in clear text, within the <AppSettings> section.

To improve security the password can be moved to the <secureAppSettings> section of the file and can be encrypted by running the Microsoft tool aspnet_regiis.exe (distributed as standard as part of .NET Framework). The <secureAppSettings> password value is then replaced with an encrypted value.

The original method of retrieving the password from the Web.Config has been updated to retrieve the encrypted value and decrypt it.

We recommend that you encrypt your password but you can continue with the old method until you are confident of this new method.

To apply Web.Config credentials encryption

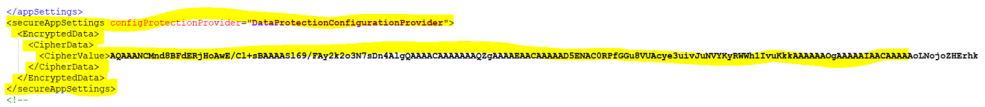
1. Open the Web.Config file in Notepad++ in administrative mode (**Run as administrator**).
2. Uncomment the <configSections> section at the top of the Web.Config file.
3. Comment out the Password line in <appSettings> (Figure 25).

Figure 25: <appSettings>

```
<appSettings>
    <add key="ValidationSettings:UnobtrusiveValidationMode" value="None" />
    <add key="Database" value="UNITEDATABASE" />
    <add key="Username" value="UNITEUSERNAME" />
<!--    <add key="Password" value="UNITEPASSWORD" />  -->
```

4. Uncomment the <secureAppSettings> section in order to set an initial value for the encrypted password.
5. Save and close the Web.Config.
6. Open Command with 'Run as Administrator' and set the prompt with the path C:\Windows\Microsoft.NET\Framework\v4.0.30319.
7. Fire the command Aspnet_regiis.exe -pef "secureAppSettings" "[path of WCF website web.config file]" -prov DataProtectionConfigurationProvider.
8. Once you get the 'Succeeded!' message, open the Web.Config file again and check that 'CipherValue' has been added (Figure 26).

Figure 26: Encrypted password



If the encryption process fails you can revert to the original method by reinstating the standard password section of the Web.Config.

Upgrading your UNIT-e Development website



To upgrade your UNIT-e Development website

1. Copy the **WCF Service** folder from within **C:\Inetpub\UNIT-e Install Web Site** into **C:\Inetpub\UNIT-e Development website**.

2. Copy the **WCF website** folder from within **C:\Inetpub\UNIT-e Install Web Site** into **C:\Inetpub\UNIT-e Development website**.



Make sure that you've specified a '.NET 4 Classic' or '.NET 4.5 Classic' **Application Pool**. Refer to *About Application Pools* (see page 32) for further information.

3. Update the WCF website Application Settings in IIS with the login credentials for your UNIT-e database, as explained in Step 7. of *Installing UNIT-e WCF Online Services* (see page 40).

4. In Administrative mode, locate the Web.config file in **C:\inetpub\UNIT-e Install Web Site\WCFWebSite**, go to the <client> section at the bottom of the file and adjust the hostnames of the endpoint addresses as shown in Step 11. of *Installing UNIT-e WCF Online Services* (see page 40).

5. Carry out required customisations to web pages.

Upgrading your UNIT-e Live website



To upgrade your UNIT-e Live website

1. Copy the **WCF Service** folder from within **C:\Inetpub\UNIT-e Development website** into **C:\Inetpub\UNIT-e Live website**.

2. Copy the **WCF website** folder from within **C:\Inetpub\UNIT-e Development website** into **C:\Inetpub\UNIT-e Live website**.

3. Amend the files as necessary, as explained from Step 7. onwards in *Installing UNIT-e WCF Online Services* (see page 40).

4. Test the login, logout and registration process in the UNIT-e Live website. This may require an IISreset, which you can trigger by running 'IISreset' from the task bar Search facility or by opening a DOS prompt in Administrative mode and entering 'IISreset'.

Updating your External Web Server



To update your External Web Server

1. After testing, update your External Web Server by copying the whole of the **C:\Inetpub\UNIT-e Live website\WCFWebSite** directory from the Internal Web Server to **C:\Inetpub\UNIT-e Live website** on the External Web Server.



Make sure that you've specified a '.NET 4 Classic' or '.NET 4.5 Classic' **Application Pool**. Refer to *About Application Pools* (see page 32) for further information.

2. To set up a secure External website operating over HTTPS URL you need to edit the WCF Online Services Web.config file. In Administrative mode, locate the Web.config file in **C:\inetpub\UNIT-e Live website,** go to the <bindings> section and change the security mode tag as shown below:

   ```
   <security mode="Transport" >
   ```

3. Make the same change in the WCF Service Web.config file that the WCF Online Services site is connecting to. This should be located in the **WCFService** folder in the **UNIT-e Live website** on the Internal Web Server.

Website authentication for UNIT-e WCF Online Services

Seamless authentication in WCF for Internet users is only supported through Microsoft Active Directory Federated Services (ADFS).



Refer to the *Configuring UNIT-e for use with ADFS* handbook (ADFS.pdf) for further information.

Browsing the Web Services Description Language (WSDL) in WCF

If you want to customise your websites and need to see a list of all available methods by browsing the Web Services Description Language (WSDL), this can be achieved by locating the Web.config file in the **WCFService** folder in **C:\inetpub\UNIT-e Web Service** and setting the **serviceMetadata httpGetEnabled** values to "true", as shown below.

```
<behaviors>
    <serviceBehaviors>
        <behavior>
            <!-- Change to true to expose Meta Data (WSDL)-->
            <serviceMetadata httpGetEnabled="true" httpsGetEnabled="true"/>
            <serviceAuthorization principalPermissionMode="Always"/>
            <serviceCredentials useIdentityConfiguration="true"/>
        </behavior>
    </serviceBehaviors>
</behaviors>
```

Once this flag is set the list of methods is displayed in the UNITeService.svc page.



The UNITeService.svc page may take some time to display when the **serviceMetadata httpGetEnabled** values are set to "true".

IIS timeout settings for Online Services

IIS timeout settings specify how long a worker process can remain idle (i.e. not processing requests) before it shuts down.

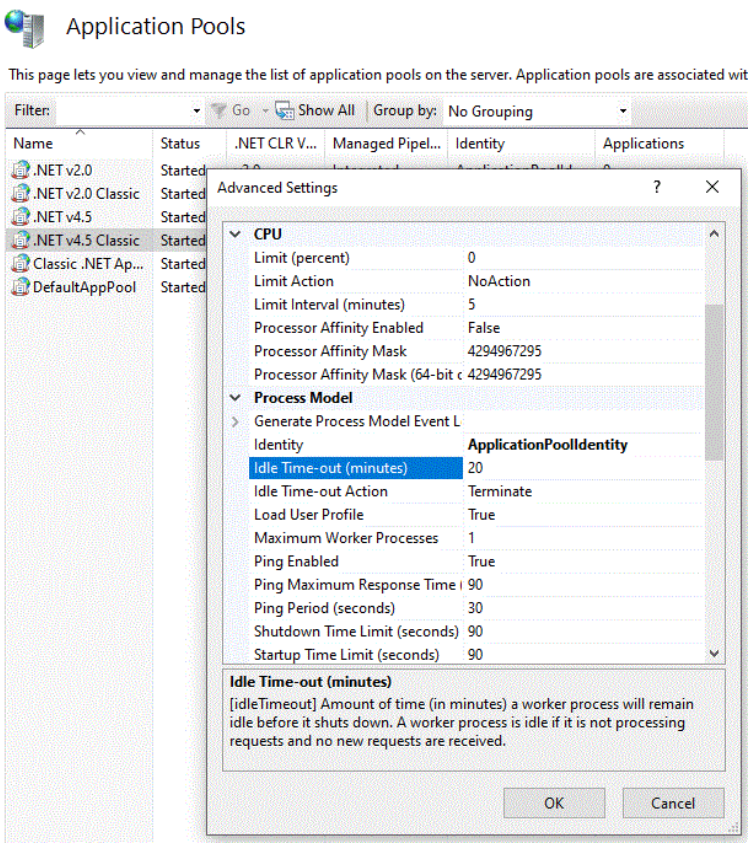
Microsoft has removed the ability to disable the idle timeout in IIS 7 so it's only possible to set a time in minutes. For Microsoft information on settings for application pools go to:

https://docs.microsoft.com/en-us/iis/get-started/whats-new-in-iis-85/idle-worker-process-page-out-in-iis85

To specify the IIS timeout setting

1. Open IIS Manager and select **Application Pools**.
2. Select and right-click on the appropriate Application Pool.
3. Select **Advanced Settings** from the pop-up menu to open the **Advanced Settings** form (Figure 27).
4. Go to the **Process Model** section and set the **Idle Time-out (minutes)**. The maximum time that you can specify is 43200 minutes (30 days).

Figure 27: Advanced Settings



Using multiple payment portals

A situation may arise where you wish to use more than one payment portal with UNIT-e Online Services.



To use multiple payment portals

1. Install separate versions of UNIT-e Online Services for each payment portal.
2. Specify a different user in the Web.config file for each installation (see Step 7. of *Installing UNIT-e WCF Online Services* (see page 40)).
3. Open UNIT-e Database Manager (Settings) [UDMSE.exe] and find the 'Application\OSEN\Payment\Academy Website' setting key.
4. Create a copy of the default setting value for each of the payment portals and amend the copies so that they are associated with each of the users created in Step 2.
5. Find the 'Application\OSEN\Payment\Portal ID' setting.
6. Create a copy of the default setting value for each of the payment portals and amend the copies so that they are associated with each of the users created in Step 2.



Refer to the *UNIT-e Database Manager (Settings)* handbook (UDMSE.pdf) for further information about how to copy setting values and associate them with individual users or configurations.

Chapter 4:

Setting up the Online Strangers Transfer Service

The UNIT-e Online Strangers Transfer Service is a Microsoft® Windows process that deals with student and organisation information entered online (either via UNIT-e Online Services or UNIT-e Online Services for Organisations). Once you've prepared the student and organisation data in UNIT-e Online Stranger Mapping or UNIT-e Organisation Stranger Mapping, the Online Strangers Transfer Service, which runs automatically every ten minutes, picks up the mapped student and organisation data and carries out the following:

- It changes the status of any new student or organisation entered online from 'stranger' to 'student'.
- If an online record is identified as being a duplicate of an existing record in your database, it merges the online data with the existing record.



Refer to the *Managing UNIT-e Online Services* handbook (MOSC.pdf) for further information about UNIT-e Online Stranger Mapping.

This chapter includes the following:

- *Installing the Online Strangers Transfer Service* (see page 56)
- *Configuring Online Strangers Transfer Service* (see page 59)
- *Copying the CAPITA.LIC file* (see page 60)
- *Defining UNIT-e settings for MAC Address authentication* (see page 61)

Installing the Online Strangers Transfer Service

The UNIT-e Online Strangers Transfer Service must be installed on your main UNIT-e server. This process does not require access to the External Web Server or the Internet. It only requires access to the UNIT-e database.

To install Online Strangers Transfer

1. Go to **Software Setup\Online Strangers Transfer Service Setup** in the latest release image and run the setup.exe to start the Setup Wizard (Figure 28).

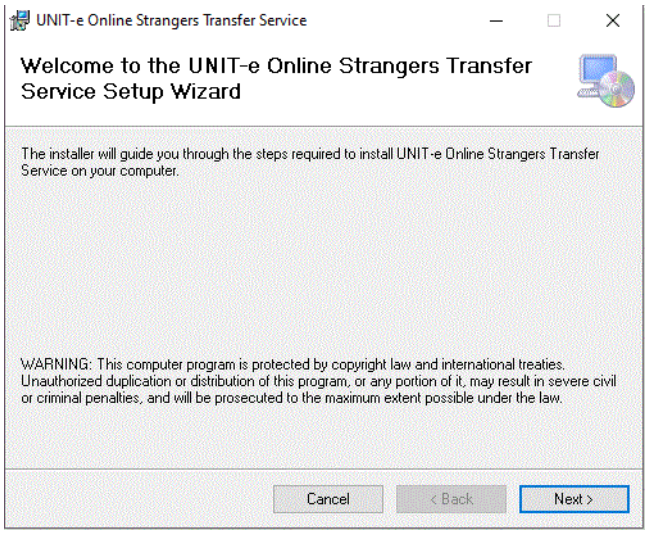
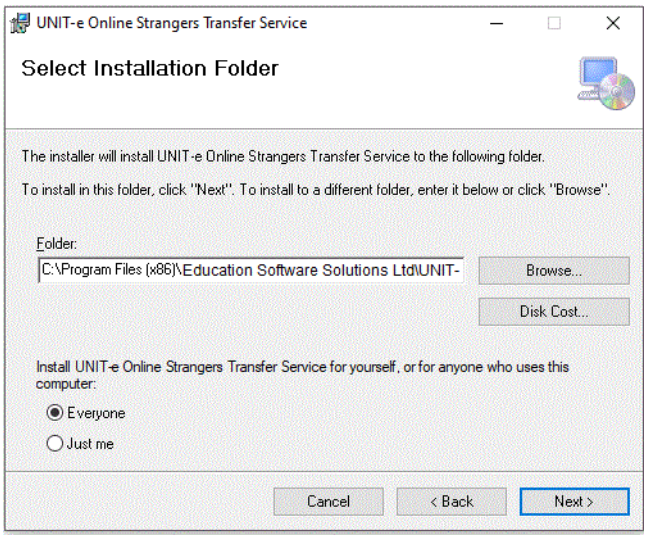


Figure 28: Online Strangers Transfer Service Setup Wizard - Welcome

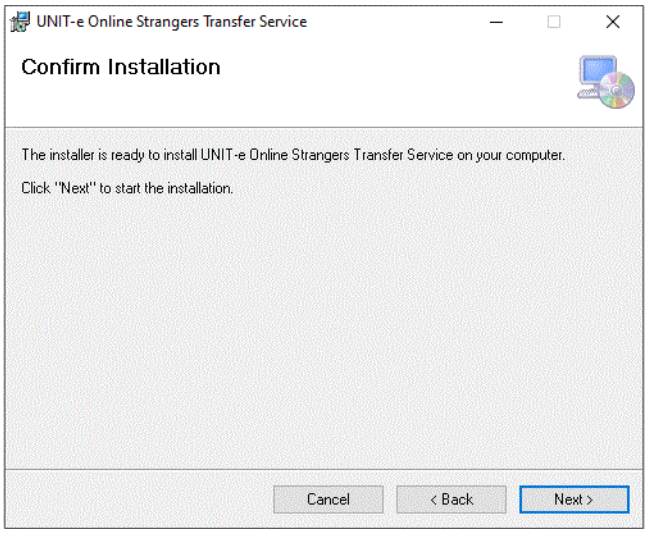
2. Click **Next** to continue to the **Select Installation Folder** form (Figure 29). By default the application is installed in **C:\Program files (x86)\Education Software Solutions Ltd\UNIT-e Online Strangers Transfer Service**.

Figure 29: Online Strangers Transfer Service - Select Installation Folder



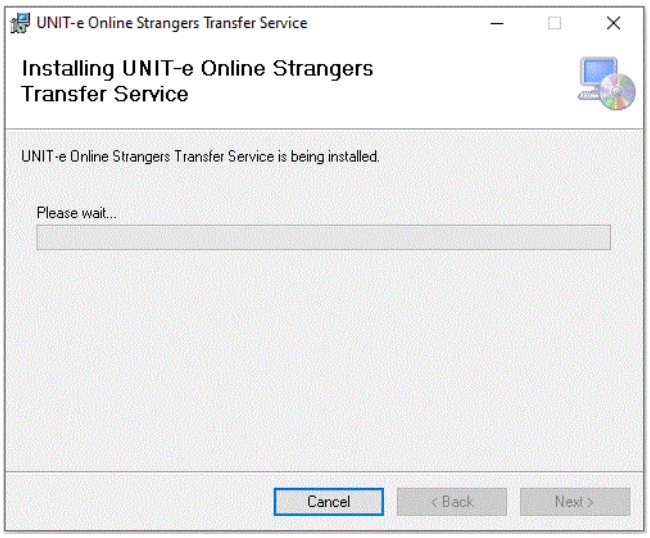
3. Click **Next** to continue to the **Confirm Installation** form (Figure 30).

Figure 30: Online Strangers Transfer Service - Confirm Installation



4. Click **Next** to continue. The **Installing UNIT-e Online Strangers Transfer Service** form is displayed as the process takes place (Figure 31).

Figure 31: Online Strangers Transfer Service - Installing



5. As the installation proceeds the installer displays the **Set Service Login** form (Figure 32), prompting for the service login to be used when running the service. **Username** should contain the Domain Name (the domain in which the system is running) and your Windows Username. For example:

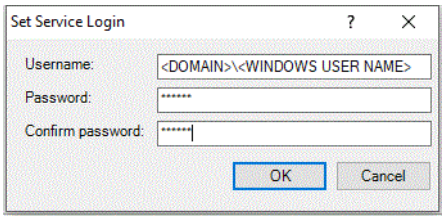
   - Domain = CSS
   - Windows Username = jbloggs
   - Service Login **Username** = CSS\jbloggs



- The **Domain** name and **Username** are case sensitive.
- Your **Domain** name can be obtained from **Control Panel | System and Security | System**. Your Windows name is the name you use when you log into Windows. If a machine is not in a domain the Domain name should be replaced with the machine name.

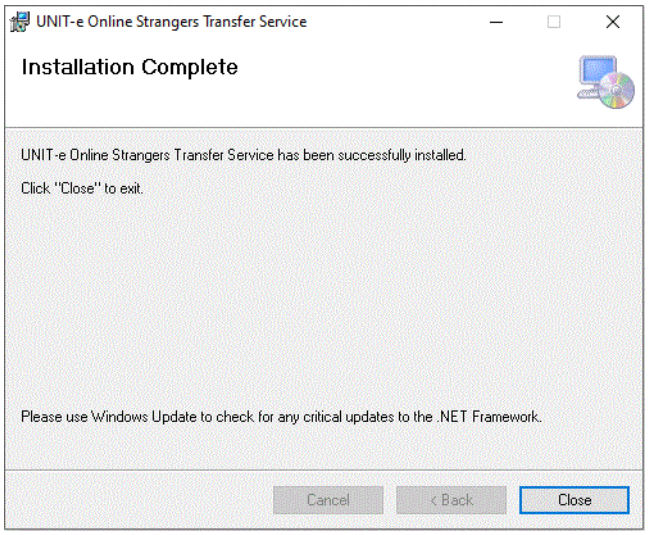
Enter your Windows **Password** and **Confirm password**.

Figure 32: Online Strangers Transfer Service - Set Service Login



6. When you click **OK** you're taken to the **Installation Complete** form (Figure 33). Click **Close**.

Figure 33: Online Strangers Transfer Service - Set Service Login



Configuring Online Strangers Transfer Service

Once you've installed it you must configure the Online Strangers Transfer Service to make it work with your UNIT-e system.

- *Amending the config file* (see below)
- *Copying the CAPITA.LIC file* (see page 60)

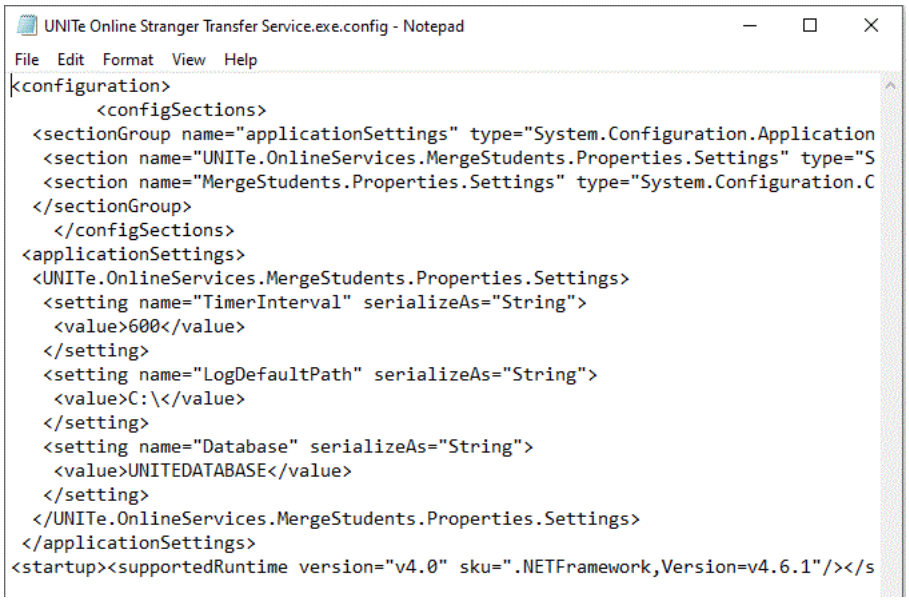
Amending the config file

The UNIT-e Online Strangers Transfer Service configuration file (UNITe Online Strangers Transfer Service.exe.config) must be updated to specify your database and the location for error files produced by the process. You may also adjust the default service running frequency.

To configure Online Strangers Transfer

1. Go to the **C:\Program files (x86)\Education Software Solutions Ltd\UNIT-e Online Strangers Transfer Service** folder and open the **UNITe Online Strangers Transfer Service.exe.config** file (Figure 34).

Figure 34: UNIT-e Online Strangers Transfer Service.exe.config



2. The Online Strangers Transfer Service runs every 10 minutes by default (defined in the file as 600 seconds). You can modify this interval by adjusting the 'TimerInterval':

```
<setting name="TimerInterval" serializeAs="String">
    <value>600</value>
</setting>
```

3. Modify the 'LogDefaultPath' value to specify the folder where you wish to store error logs:

```
<setting name="LogDefaultPath" serializeAs="String">
    <value>C:\</value>
</setting>
```

4. Specify the 'Database':

```
<setting name="Database" serializeAs="String">
    <value>UNITEDATABASE</value>
</setting>
```

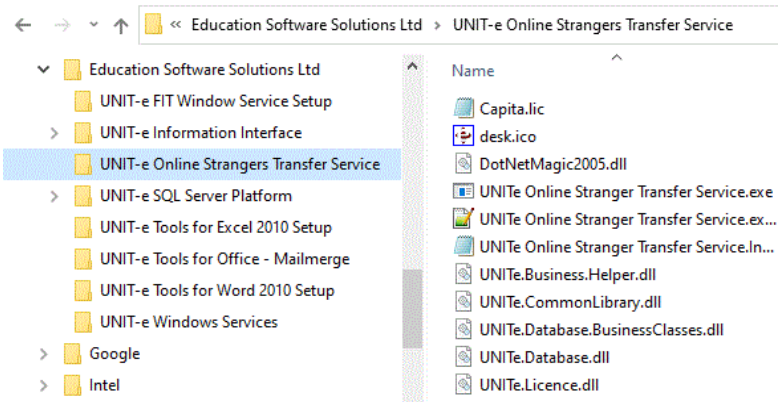
5. Save the UNITe Online Strangers Transfer Service.exe.config file.

Copying the CAPITA.LIC file

You must place a copy of the CAPITA.LIC licence file in the directory where the Online Strangers Transfer Service has been installed, which is by default **C:\Program files (x86)\Education Software Solutions Ltd\UNIT-e Online Strangers Transfer Service**.

At the end of the installation and configuration process you should have a directory structure similar to that shown in Figure 35.

Figure 35: Directory structure for CAPITA.LIC file



Defining UNIT-e settings for MAC Address authentication

The Online Strangers Transfer Service and other UNIT-e Windows Services (e.g. Emails, and SMS) are able to connect to the UNIT-e database through MAC Address authentication. This provides a level of security to ensure that only authorised users can access the system. These settings must be activated.

If LDAP authentication has been implemented, the Windows Services automatically log in using LDAP credentials.

- *Activating the UNIT-e settings* (see below)
- *Troubleshooting MAC Address authentication* (see page 63)
- (see page 63)

Activating the UNIT-e settings

To activate the UNIT-e setting

1. Open UNIT-e Database Manager (Users) [UDMUS.exe] and either create or select the 'uniteservice' user or define your own user for the UNIT-e Windows Service. The activation process assumes that 'uniteservice' is the user running the UNIT-e Windows Services but you can specify a different user if you prefer (see Step 5. below).

   For the purposes of MAC authentication, the 'uniteservice' user doesn't require any menu or data rights to your UNIT-e database. However, when used for other purposes (e.g. Online Stranger Transfer, Student Messaging or File Upload) the user should be a member of the 'Windows Services user group', and may also require additional class permissions.

   Refer to *Class permissions* (see page 25) for further information.

2. Make sure that you have permissions for the **System** | **Security & Settings** menu item in UNIT-e Database Manager (Users).

3. Open the **Security and Settings** II application via one of the following:

   - The **Tools** menu in Information Interface.

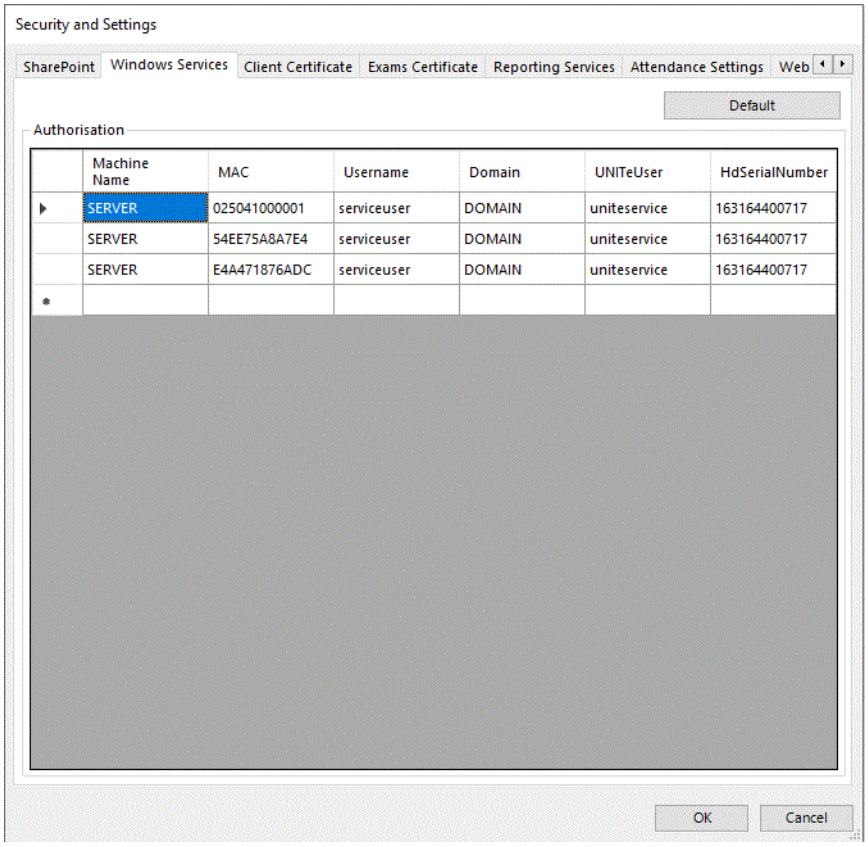
- The **Tools** menu in UNIT-e Workplace
- Through any II application via an integrated service menu item or button.

ORACLE CUSTOMERS ONLY - A 64 bit **Security and Settings** application is provided to set up secure MAC Address connections for Windows services. This is available from the **Software Setup\Security and Settings 64bit** folder in the latest platform release. This is required if you are logged in the server running the Windows Service.

4. Go to the **Windows Services** tab (Figure 36) and click **Default** to display the MAC Address of the machine you're currently using, which will be used to run the Windows Services. This is shown as the **Machine Name**.

Refer to *Troubleshooting MAC Address authentication* (see page 63) for notes on how to find the MAC Address if the **Default** button doesn't retrieve the details.

Figure 36: Security and Settings



5. Amend the following, if necessary. Don't change the **Machine Name**, **MAC** and **HdSerialNumber** fields.

- **Username** and **Domain**: These must be the Username and Domain of the Windows user running the UNIT-e service. This is the same Domain and Windows Username combined to give the Service Login **Username** shown in Step 5. of *Installing the Online Strangers Transfer Service* (see page 56). If this is the user currently logged into the machine, the **Username** and **Domain** will automatically be correct.
- **UNIT-e User:** This defaults to 'uniteservice', which is assumed to be the specific to the Windows Service, but you can amend this to a different user. Whichever

user you specify, they must exist in UNIT-e Database Manager (Users) [UDMUS.exe].

If there's more than one line with the same MAC Address the first successful login is used.

6. Click **OK** to activate the settings.

Troubleshooting MAC Address authentication

To find the MAC Address of the machine running Windows Service if using the Default button hasn't been successful

1. Run 'ipconfig/all' in the command window. The 'Physical Address' displayed is the MAC Address.
2. Enter the MAC Address into UNIT-e without the separators (e.g. a MAC Address shown as 00-11-85-78-F5-68 must be entered as 00118578F568).
3. Run 'nbtstat -n' in the command window. This gives the NetBIOS name table, which gives the machine name and the domain name. The machine name and the domain entered should match the case shown in the Command Window.

You can specify multiple settings to run the Windows Service from different servers/ machines.

The domain name, machine name and the Windows username are case sensitive. Always use the same case as used in the MAC Address settings during the installation process.

Appendices

- *Appendix A: Previous enhancements* (see page 66)
- *Appendix B: WSE & WCF differences in Online Services* (see page 68)

Appendix A: Previous enhancements

The following enhancements were made for previous releases:

- *4.59 enhancements* (see below)
- *4.58 enhancements* (see below)
- *4.57 enhancements* (see page 67)

4.59 enhancements

- *UNIT-e Web.Config credentials encryption* (see page 45)

  This section has been updated with additional information.

4.58 enhancements

- *UNIT-e Web.Config credentials encryption* (see page 45)

  This section has been added to provide information on how to improve security by encrypting the Web.Config credentials.

- References to the *UNIT-e Card Payments & Refunds* handbook (UCP.pdf) have been updated to *Managing UNIT-e Card Payments & Refunds* (MCP.pdf).

4.57 enhancements

- Handbook short code changes

  - The short code reference for this handbook has been amended from UOSWSI to MOSWSI to reflect the fact that it is a Manager handbook.

  - Short code references to the *Managing UNIT-e Online Services* handbook have been amended from UOSC to MOSC to reflect the fact that it is a Manager handbook.

  - Short code references to the *Managing UNIT-e Online Services for Organisations* handbook have been amended from UOSORG to MOSORG to reflect the fact that it is a Manager handbook.

- Human Resources Online Services, Vocational Qualification Management & Tracking and Personal Learning Support Plan (PLSP)

  References to the above applications have been removed from the handbook, as they are no longer supported.

Appendix B: WSE & WCF differences in Online Services

- *WCFWebSite|App_Code|Appraisals.cs* (see page 69)
- *WCFWebSite|App_Code|BookLeave.cs* (see page 69)
- *WCFWebSite|App_Code|OnlineHRServices.cs* (see page 70)
- *WCFWebSite|App_Code|OnlineServices.cs* (see page 71)
- *WCFWebSite|App_Code|OnlineVQAssessorServices.cs* (see page 74)
- *WCFWebSite|App_Code|OnlineVQEmployerServices.cs* (see page 74)
- *WCFWebSite|App_Code|OnlineVQLearnerServices.cs* (see page 74)
- *WCFWebSite|App_Code|OrganisationService.cs* (see page 75)
- *WCFWebSite|App_Code|PLSP.cs* (see page 77)
- *WCFWebSite|App_Code|Recruitment.cs* (see page 79)
- *WCFWebSite|App_Code|SCPPayment.cs* (see page 80)
- *WCFWebSite|App_Code|UNITe WebSite Collection|Question.cs* (see page 80)
- *WCFWebSite|App_Code|UNITe WebSite Selection|Enrolment.cs* (see page 80)
- *WCFWebSite|App_Code|UNITe WebSite Selection|Selection.cs* (see page 80)
- *WCFWebSite|App_Code|UNITe WebSite Selection|SundryItem.cs* (see page 81)
- *WCFWebSite|AssessorServices|*.cs* (see page 81)
- *WCFWebSite|EmployerServices|*.cs* (see page 81)
- *WCFWebSite|LearnerServices|*.cs* (see page 81)
- *WCFWebSite|OnlineServices|*.** (see page 82)
- *WCFWebSite|OnlineServices|feeConcessions.master.cs* (see page 84)

WCFWebSite\App_Code\Appraisals.cs

Include section rationalised to only reference libraries required from the list below:

```
using System;
using System.Collections.Generic;
using System.Data;
using System.Globalization;
using System.IO;
using System.Web.SessionState;
using System.Web.UI;
using System.Web.UI.WebControls;
using System.Xml.Serialization;
using UNITe.Business.Helper;
using UNITe.WCF;
```

OSWS.ServiceWse

Replaced by

IUNITeService

HRWS.HumanResourcesWse

Replaced by

HRWS.HRServiceClient

WCFWebSite\App_Code\BookLeave.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Web.SessionState;
using System.Web.UI;
using System.Web.UI.WebControls;
using UNITe.Business.Helper;
using UNITe.WCF;
```

HRWS.HumanResourcesWse

Replaced by

HRWS.HRServiceClient

WCFWebSite\App_Code\OnlineHRServices.cs

Include section rationalised to only reference libraries required from the list below

```
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.IO;
using System.Text;
using System.Text.RegularExpressions;
using System.Web.SessionState;
using System.Web.UI;
using System.Xml.Serialization;
using UNITe.Business.Helper;
using UNITe.CommonLibrary.Security;
using UNITe.WCF;
using UNITe.WCF.ClientLibrary;
```

OSWS.ServiceWse
Replaced by
IUNITeService

HRWS.HumanResourcesWse
Replaced by
HRWS.HRServiceClient

XMLWS.XMLServiceWse
Replaced by
XMLWS.XMLServiceClient

WCFWebSite\App_Code\OnlineServices.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.Globalization;
using System.IO;
using System.Linq;
using System.Security.Claims;
using System.Text;
using System.Text.RegularExpressions;
using System.Xml;
using UNITe.Business.Helper;
using UNITe.WCF;
```

```
public struct AddressTypes
```

created to fix mistake with individual private static address reverse link variables

Methods AddressReverseLinkCheck and UpdateAddressReverseLinks updated accordingly

OnlineServices changed from public class to public abstract class

UNITe.WebSite namespace prefix taken off all variables as fully qualified name not required

UNITe.WebSite.OnlineServices also removed

OSWS.ServiceWse InitWebService replaced by new method:

```
public static IUNITeService InitWebService(System.Web.SessionState.HttpSessionState session)
    {
        IUNITeService service = session["service"] as IUNITeService;

      if (service == null) {
        bool federatedEnabled = CommonLibrary.ConfigSetting.GetSetting < bool > ("EnableFederatedLogin", false);
        var databaseName = CommonLibrary.ConfigSetting.GetSetting < string > ("Database");
        var userName = CommonLibrary.ConfigSetting.GetSetting < string > ("Username");
        var pwd = CommonLibrary.ConfigSetting.GetSetting < string > ("Password");
```

```
            if (federatedEnabled && ClaimsPrincipal.Current != null &&
            ClaimsPrincipal.Current.Identity != null &&
            ClaimsPrincipal.Current.Identity.IsAuthenticated &&
                ClaimsPrincipal.Current.Identity.AuthenticationType == "Federation") {
                ClaimsIdentity claimsIdentity = ClaimsPrincipal.Current.Identity as
                ClaimsIdentity;
                service = WCF.ClientLibrary.ServiceFactory.CreateClient < IUNITeService >
                (databaseName, userName, pwd, claimsIdentity.Claims);
            } else {
                object creds = session["userCredentials"];

                if (creds == null) {
                    var userCredentials = new CommonLibrary.Security.UserCredentials();
                    userCredentials.Database = databaseName;
                    session["database"] = userCredentials.Database;
                    userCredentials.UserName = userName;
                    userCredentials.Password = pwd;
                    session["userCredentials"] = userCredentials;
                    creds = userCredentials;
                }
                service = WCF.ClientLibrary.ServiceFactory.CreateClient < IUNITeService >
                (creds);
            }
            session["service"] = service;
        }
        return service;
}
```

All occurrences of

OSWS.ServiceWse serviceOws = InitWebService(session);

replaced by

UNITeServiceClient service = InitWebService(session);

Which means all occurrences of

serviceOws

Replaced by

service

OSWS prefix taken off all variables except for arrays which are replaced by a List:

OSWS.ModuleQuestion[] questions replaced by List<ModuleQuestion> questions

OSWS.Enrolment[] fndEnrl = new OSWS.Enrolment[0]; replaced by List<Enrolment> fndEnrl = new List<Enrolment>();

OSWS.OnlineUserData[] oudf = new OSWS.OnlineUserData[0]; replaced by List<OnlineUserData> oudf = new List<OnlineUserData>();

OSWS.Route[] routes = serviceOws.Routes(param); replaced by List<Route> routes = service.Routes(param);

OSWS.ModuleApplication[] applications = new OSWS.ModuleApplication[0]; replaced by List<ModuleApplication> applications = new List<ModuleApplication>();

OSWS.Enrolment[] enrolments = new OSWS.Enrolment[0]; replaced by List<Enrolment> enrolments = new List<Enrolment>();

OSWS.StudentEnquiryDetails[] stuEnqDetails = serviceOws.FindStudentEnquiryDetails(param); replaced by List<StudentEnquiryDetails> stuEnqDetails = service.FindStudentEnquiryDetails(param);

OSWS.PersonalDetails[] details = new OSWS.PersonalDetails[0]; replaced by List<PersonalDetails> details = null;

OSWS.EnrolmentWSRLLWR[] enrolments replaced by List<EnrolmentWSRLLWR> enrolments

Arrays Length variable have to be replaced by their equivalent List Count variable:-

questions.Length replaced by questions.Count

fndEnrl.Length replaced by fndEnrl.Count

oudf.Length replaced by oudf.Count

routes.Length replaced by routes.Count

stuEnqDetails.Length replaced by stuEnqDetails.Count

Following methods amended to process Sundry items selection:

Selection, SaveSelection, GetSelection, ProcessCheck, ProcessCheckFE, ProcessCheckFS, ProcessCheckFW, ProcessCheckHE

New method AddItemToBasket created to add Sundry items to the basket.

WCFWebSite\App_Code\OnlineVQAssessorServices.cs

WCFWebSite\App_Code\OnlineVQEmployerServices.cs

WCFWebSite\App_Code\OnlineVQLearnerServices.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Configuration;
using System.Text;
using UNITe.Business.Helper;
using UNITe.CommonLibrary.Security;
using UNITe.WCF;
using UNITe.WCF.ClientLibrary;
```

New security methods:

GetToken, WhiteListUrl, GetWhiteListedUrl, GetWhitelistedUrl, GetAllowedUrls, GetInverseAllowedUrls

OSWS.ServiceWse InitWebService and OSWS.ServiceWse ConfigureWebService

replaced by new methods:

```
    public static IUNITeService
InitWebService(System.Web.SessionState.HttpSessionState session)
    {
        UserCredentials userCredentials = new UserCredentials();
        userCredentials.Database = ConfigurationManager.AppSettings["Database"];
        userCredentials.UserName = ConfigurationManager.AppSettings["Username"];
        userCredentials.Password = ConfigurationManager.AppSettings["Password"];

        return ServiceFactory.CreateClient<IUNITeService>(userCredentials);
    }

    public static IUNITeService
ConfigureWebService(System.Web.SessionState.HttpSessionState session,
UserCredentials uCredentials)
    {
        return ServiceFactory.CreateClient< IUNITeService>(uCredentials);
    }
```

GetPageURL method removed

WCFWebSite\App_Code\OrganisationService.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.IO;
using System.Linq;
using System.Text;
using System.Web.UI.WebControls;
using System.Xml;
using System.Xml.Serialization;
using UNITe.Business.Helper;
using UNITe.Business.Helper.OrganisationService;
using UNITe.CommonLibrary.ExtensionMethods;
using UNITe.CommonLibrary.Security;
using UNITe.WCF;
using UNITe.WCF.ClientLibrary;
```

New security method:

GetToken

OSWS.ServiceWse InitWebService

replaced by new method:

```
public static IUNITeService InitWebService(System.Web.SessionState.HttpSessionState session)
    {
        UserCredentials userCredentials = new UserCredentials();
        userCredentials.Database = ConfigurationManager.AppSettings["Database"];
        userCredentials.UserName = ConfigurationManager.AppSettings["Username"];
        userCredentials.Password = ConfigurationManager.AppSettings["Password"];

        return ServiceFactory.CreateClient<IUNITeService>(userCredentials);
    }
```

OSWS.ServiceWse

Replaced by

IUNITeService

OSWS.OnlineUserData[] oudf

Replaced by

List<OSWS.OnlineUserData> oudf

oudf.Length

Replaced by

oudf.Count

moduleQuestionAnswersList.ToArray()

Replaced by

moduleQuestionAnswersList

OSWS.StudentApplication[] studentApps = studentApplications.ToArray();

Replaced by

List<OSWS.StudentApplication> studentApps = studentApplications;

OSWS.StudentEnquiry[] studentEnqs = studentEnquiries.ToArray();

Replaced by

List<OSWS.StudentEnquiry> studentEnqs = studentEnquiries;

string[] modules

Replaced by

List<string> modules

string[] contractLineIds

Replaced by

List<string> contractLineIds

modules.Length

Replaced by

modules.Count

OSWS.Enrolment[] enrolments

Replaced by

List<OSWS.Enrolment> enrolments

organisationEnquiryDetails.ToArray()

Replaced by

organisationEnquiryDetails

OSWS.PaymentDetails[] invoiceDetails = new OSWS.PaymentDetails[10];

Replaced by

List<OSWS.PaymentDetails> invoiceDetails = null;

OSWS.PaymentDetails[] receiptDetails = new OSWS.PaymentDetails[10];

Replaced by

List<OSWS.PaymentDetails> receiptDetails = null;

invoiceDetails.ToArray()

Replaced by

invoiceDetails

receiptDetails.ToArray()

Replaced by

receiptDetails

scpRequestParameter.ReturnUrl = Uri.EscapeUriString(returnUrl);

Replaced by

scpRequestParameter.ReturnUrl = System.Web.HttpUtility.UrlPathEncode(returnUrl);

WCFWebSite\App_Code\PLSP.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Configuration;
using System.Data;
using System.Text;
using System.Xml;
using UNITe.Business.Helper;
using UNITe.CommonLibrary.Security;
using UNITe.WCF;
using UNITe.WCF.ClientLibrary;
```

New security method:

GetToken

OSWS.ServiceWse InitOSWebService and overload

replaced by new methods:

public static IUNITeService InitOSWebService(System.Web.SessionState.HttpSessionState session)

```
        {
            return InitOSWebService(session, String.Empty, String.Empty);
        }


    public static IUNITeService InitOSWebService(System.Web.SessionState.HttpSessionState
    session, string username = "", string password = "")
        {
            if (String.IsNullOrEmpty(username))
                username = ConfigurationManager.AppSettings["Username"];

            if (String.IsNullOrEmpty(password))
                password = ConfigurationManager.AppSettings["Password"];

            UserCredentials userCredentials = new UserCredentials();
            userCredentials.Database = ConfigurationManager.AppSettings["Database"];
            userCredentials.UserName = username;
            userCredentials.Password = password;

            IUNITeService service =
    ServiceFactory.CreateClient<IUNITeService>(userCredentials);
            return service;
             }
```

OSWS.ServiceWse

Replaced by

IUNITeService

WCFWebSite\App_Code\Recruitment.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Text;
using System.Xml;
using System.Data;
using System.Text.RegularExpressions;
using System.IO;
using System.Web.SessionState;
using System.Web.UI.HtmlControls;
using System.Web.UI;
using System.Web.UI.WebControls;
using UNITe.CommonLibrary.ExtensionMethods;
using UNITe.Business.Helper;
using UNITe.WCF;
```

OSWS.ServiceWse
Replaced by
IUNITeService

HRWS.HumanResourcesWse
Replaced by
HRWS.HRServiceClient

XMLWS.XMLServiceWse
Replaced by
XMLWS.XMLServiceClient

WCFWebSite\App_Code\SCPPayment.cs

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Web.SessionState;
using UNITe.Business.Helper;
using UNITe.WCF;
```

OSWS prefix taken off all variables

All occurrences of

OSWS.ServiceWse

replaced by

UNITeServiceClient

modules.ToArray()

Replaced by

modules

WCFWebSite\App_Code\UNITe WebSite Collection\Question.cs

Include section rationalised as below

```
using System.Collections.Generic;
```

WCFWebSite\App_Code\UNITe WebSite Selection\Enrolment.cs

Include section rationalised as below

```
using System;
using System.Collections.Generic;
```

WCFWebSite\App_Code\UNITe WebSite Selection\Selection.cs

New List SundryItems and new method AddItemToBasket

WCFWebSite\App_Code\UNITe WebSite Selection\SundryItem.cs

New code file with new public class SundryItem

WCFWebSite\AssessorServices.cs*

WCFWebSite\EmployerServices.cs*

WCFWebSite\LearnerServices.cs*

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Configuration;
using System.Data;
using System.Text;
using System.Web.UI;
using System.Web.UI.WebControls;
using UNITe.Business.Helper;
using UNITe.Business.Helper.OLS;
using UNITe.WCF;
```

OSWS.ServiceWse
Replaced by
IUNITeService

string[] passed to and from the web service have to be converted to a list so replaced by List<string>

getToken method moved from individual pages to App_Code\OnlineVQAssessorServices.cs

WCFWebSite\OnlineServices.**

Include section rationalised to only reference libraries required from the list below

```
using System;
using System.Collections;
using System.Collections.Generic;
using System.Data;
using System.IO;
using System.Linq;
using System.Text;
using System.Web;
using System.Web.UI;
using System.Web.UI.HtmlControls;
using System.Web.UI.WebControls;
using System.Xml;
using System.Xml.Serialization;
using UNITe.WebSite;
using WebSiteSelection = UNITe.WebSite.Selection;
using UNITe.Business.Helper;
using UNITe.Business.Helper.OLS;
using UNITe.WCF;
```

All occurrences of

```
OSWS.ServiceWse serviceOws = InitWebService(session);
```

and

```
OSWS.ServiceWse servicesOws = InitWebService(session);
```

replaced by

```
UNITeServiceClient service = InitWebService(session);
```

Which means all occurrences of

```
serviceOws
```

and

```
servicesOws
```

Replaced by

```
service
```

OSWS prefix taken off all variables except for arrays which are replaced by a List:

```
OSWS.ModuleQuestion[] questions replaced by List<ModuleQuestion> questions
OSWS.Enrolment[] fndEnrl = new OSWS.Enrolment[0];  replaced by List<Enrolment>
fndEnrl = new List<Enrolment>();
```

OSWS.Route[] routes = serviceOws.Routes(param); replaced by List<Route> routes = service.Routes(param);

OSWS.Enrolment[] enrolments = new OSWS.Enrolment[0]; replaced by List<Enrolment> enrolments = new List<Enrolment>();

Arrays Length variable have to be replaced by their equivalent List Count variable:-

questions.Length replaced by questions.Count

fndEnrl.Length replaced by fndEnrl.Count

routes.Length replaced by routes.Count

public static string GetToken

is now defined only once in C:\inetpub\wwwroot\WCFWebSite\App_Code\OnlineServices.cs

Therefore all occurrences of GetToken in web page files must be referenced with the fully qualified method name:

UNITe.WebSite.OnlineServices.GetToken

<script language="Javascript">

Is not HTML5 compliant. Replaced by:

<script type="text/javascript">

WCFWebSite\OnlineServices\feeConcessions.master.cs

```
OnlineFeeConcessions[] onlineFeeConcessionsList = null; replaced by
List<OnlineFeeConcessions> onlineFeeConcessionsList = null;
```

FeeConcessionsList.Length replaced by FeeConcessionsList.Count

```
ViewState["OnlineFeeConcessionsList"] = onlineFeeConcessionsList; replaced by
ViewState["OnlineFeeConcessionsList"] = serialize(onlineFeeConcessionsList);
OnlineFeeConcessions[] onlineFeeConcessionsList =
ViewState["OnlineFeeConcessionsList"] as OnlineFeeConcessions[]; replaced by
OnlineFeeConcessions[] onlineFeeConcessionsList =
deSerialize(typeof(OnlineFeeConcessions[]),
ViewState["OnlineFeeConcessionsList"].ToString()) as OnlineFeeConcessions[];
```

With corresponding new functions:

```
private string serialize(object obj)
    {
        XmlSerializer serializer = new XmlSerializer(obj.GetType());
        System.IO.StringWriter s = new System.IO.StringWriter();
        serializer.Serialize(s, obj);
        return s.ToString();
    }
private object deSerialize(Type type, string xml)
    {
        XmlSerializer serializer = new XmlSerializer(type);
        StringReader s = new StringReader(xml);
        return serializer.Deserialize(s);
    }
```

```
OnlineDiscountedModuleFees[] discountedModuleFeesList =
serviceOws.GetDiscountedModuleFees(enrolmentModuleConcessionsList.ToArray(),
txtPromotions.Text.Trim(), Session["UOSSpecificFeeband"].ToString());
```

replaced by

```
List<OnlineDiscountedModuleFees> discountedModuleFeesList =
service.GetDiscountedModuleFees(enrolmentModuleConcessionsList,
txtPromotions.Text.Trim(), Session["UOSSpecificFeeband"].ToString());
```

Index



If you are unable to find the information you require, the search facility in Adobe Acrobat enables you to search individual PDFs or the entire UNIT-e documentation catalogue. Refer to the *About UNIT-e documentation* section in the *Working with UNIT-e* handbook (WWU.pdf) for further details.

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